

TECHNOLOGY

REVIEW *November 1951*



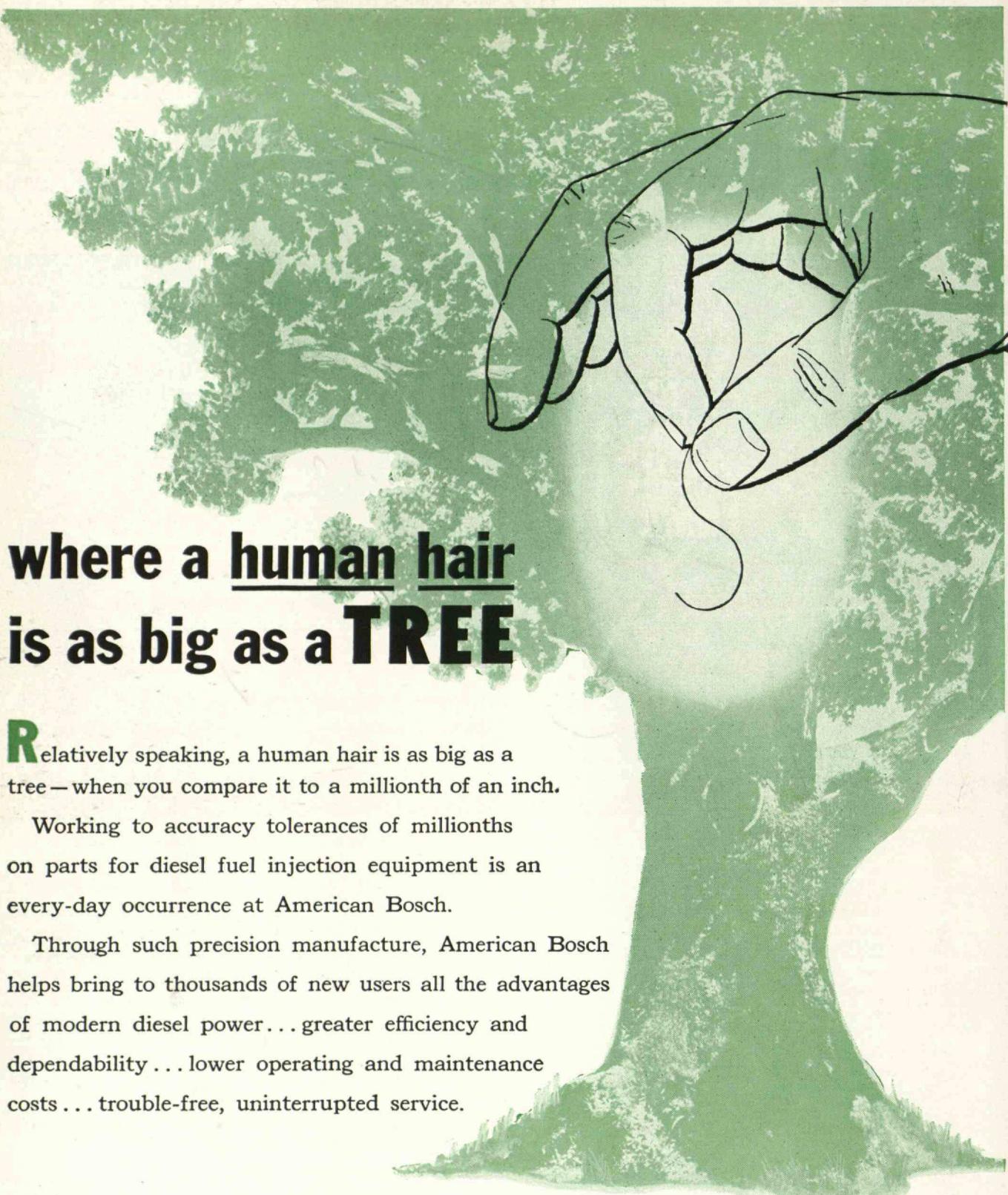
technology review

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The tricycle? No! It, too, depends on both Behr-Manning and Norton abrasives for grinding and polishing each component. The hardwood floor, too, is sanded with Behr-Manning abrasive drum covers and discs.

The mining equipment? No! From the rugged metal parts of the heavy machinery to the tough points of the drills, their performance is influenced by the

contribution Norton grinding wheels and refractories and Behr-Manning coated abrasives make to their quality.

The peanuts? No! Their brown husks were removed by machines using coated abrasives.

The stranger in the picture is the wild goose racing the jet plane. Remember, any man-made product . . . whether of metal, wood, paper, cloth, leather, ceramics or plastics . . . depends in some important way on abrasives, abrasive products, refractories or grinding machines that bear such well-known trade-marks as Norton and Behr-Manning . . . the world's largest manufacturers of abrasives and abrasive products.

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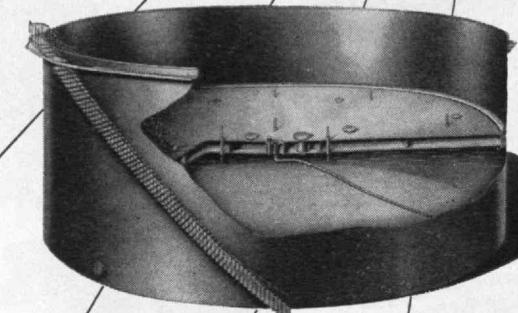
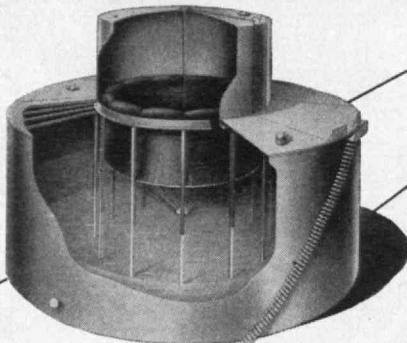
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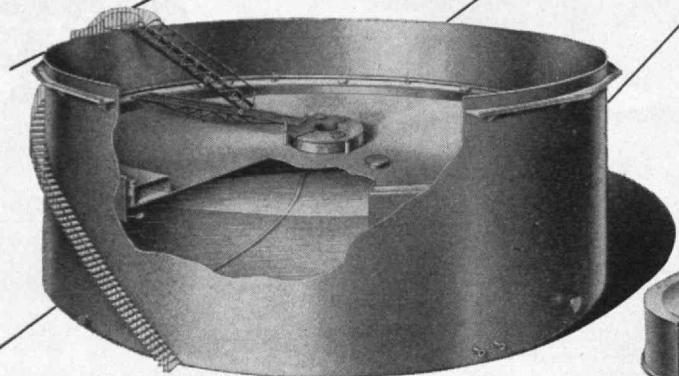
EXCLUSIVES



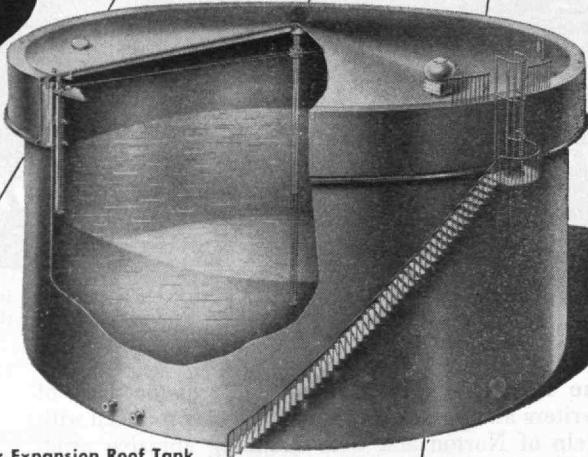
• Graver Vapor-Mizer



• Graver Double Deck Floating Roof Tank



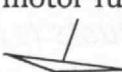
• Graver Center-Weighted Floating Roof Tank



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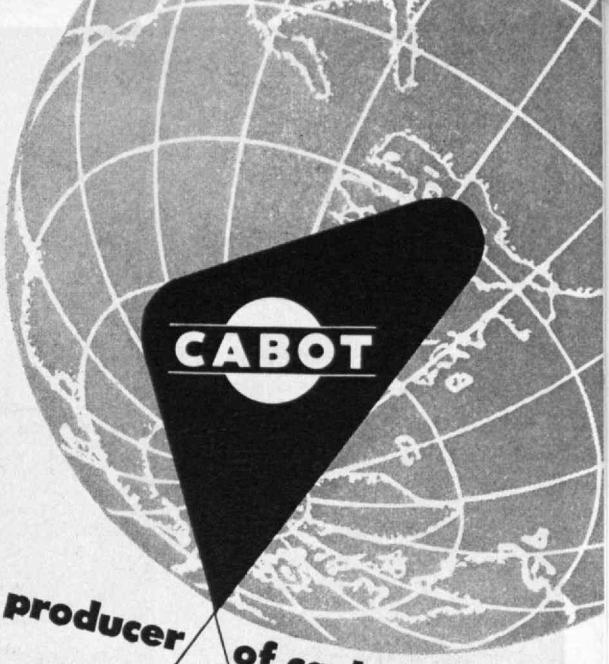
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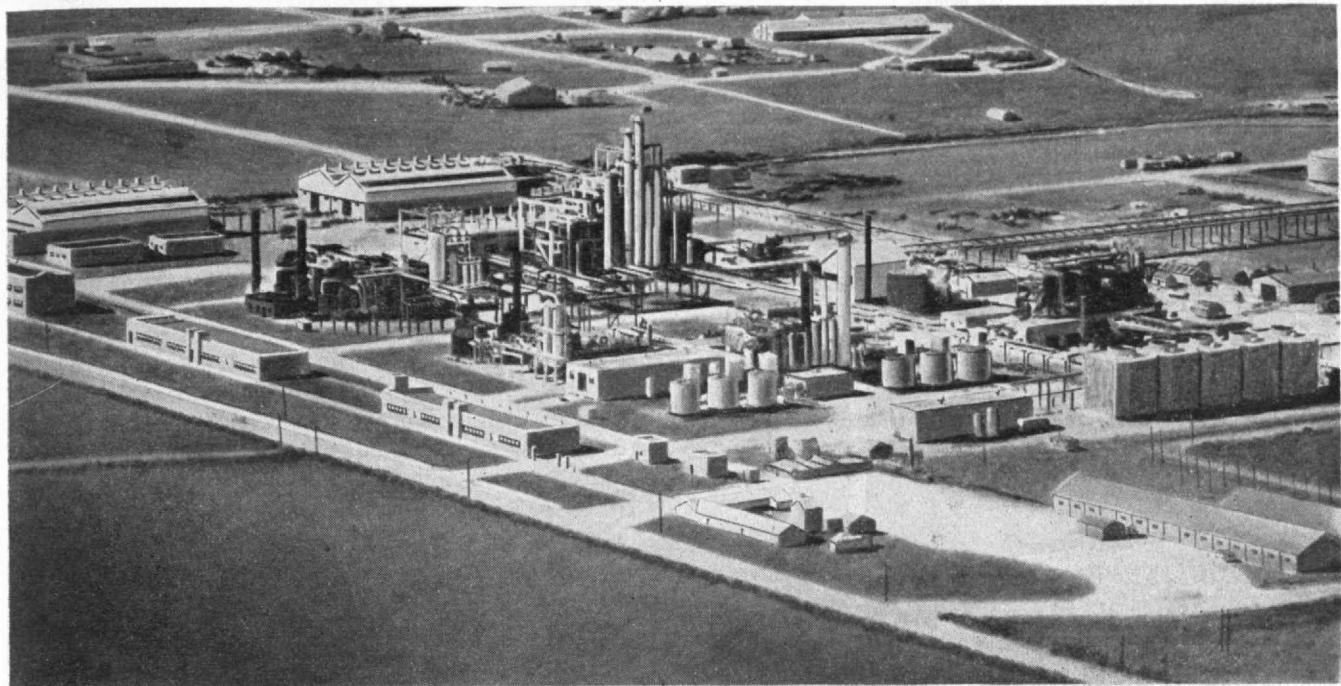
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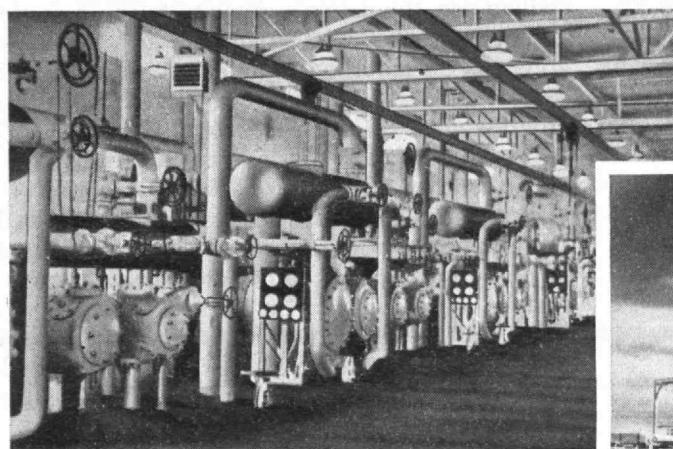
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a crude petroleum stock. It was designed by Stone & Webster Engineering Corporation and built under the supervision of E. B. Badger & Sons Co. (Great Britain) Ltd.

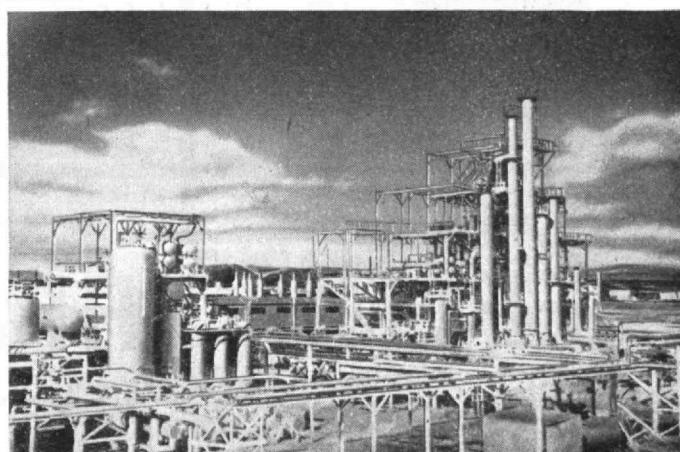
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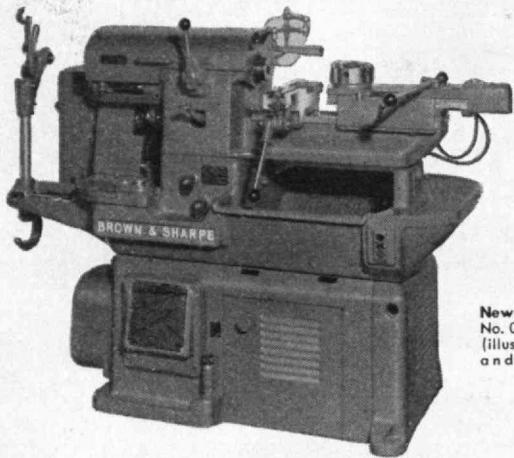


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THE TABULAR VIEW

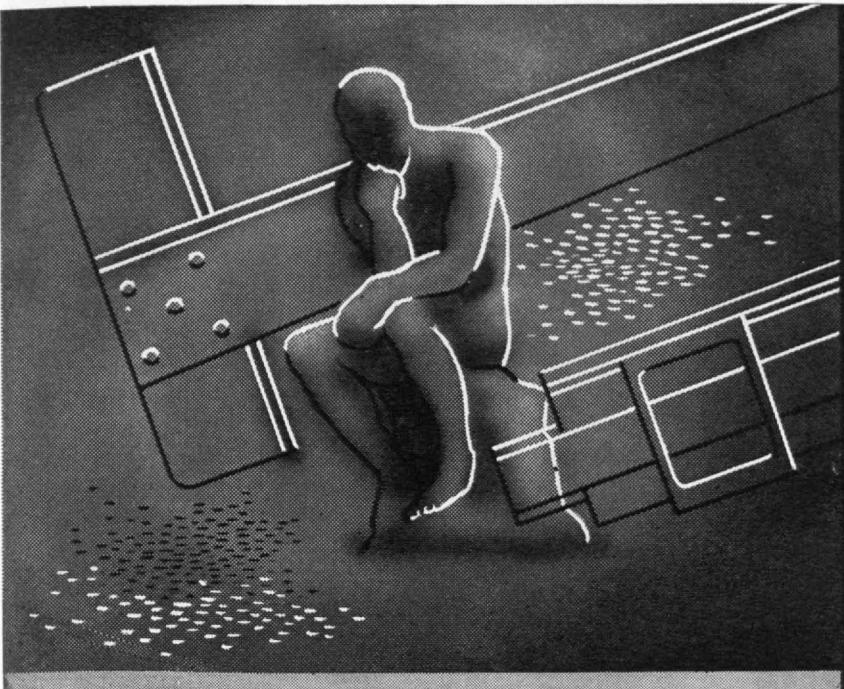
Riverbank Neighbors. — PRESIDENT KILLIAN's by-line in the pages of The Review is always a happy event; the pleasure is doubled when his name is associated with the first story to open a new volume. In the "Good Neighbor Policy in Cambridge" (page 17), Technology's president takes a look up the Charles River to comment on the good feeling and whole-hearted co-operation which exist between the "venerable and comprehensive" Harvard University and her downstream "young and specialized" neighbor on Research Row. The heated debates of an earlier decade were evidently recalled as but dim memories late last spring when Dr. Killian's article made its first bow as the address of the guest of honor at a dinner meeting of the Harvard Club of Boston.

Natural Flight. — With obvious intent to stimulate unconventional thinking about the design of aircraft, JAMES L. G. FITZPATRICK presents an extensive survey of aviation literature in "Some Thoughts on Natural Flight" (page 21). A native of New York City, where he received his bachelor's and master's degrees from Manhattan College in 1930 and 1931, respectively, Mr. FitzPatrick is general assistant of the Textile Evening High School in New York City. He holds a pilot's license and is proprietor of the FitzPatrick Company, which engages in transportation research. A close student of the literature of aviation, Mr. FitzPatrick spends many a busy hour at the library of the Institute of the Aeronautical Sciences. It was there that he came under the watchful eye of S. Paul Johnston, '21, director of that organization, to whom The Review is indebted for suggesting that Mr. FitzPatrick make a bow to Review readers.

Steel Progress. — No commodity is a better yardstick of a nation's industrial activity than steel. With unprecedented demands just ahead for military and civilian use, the nation's capacity to produce steel is undergoing substantial expansion, and the center of gravity of the industry's productive capacity is shifting toward the eastern part of the United States. Recent progress in this fast-moving field is reported in "The Basic Metal" (page 25) by PAUL COHEN, '35, a frequent contributor and an editorial associate of The Review for more than a decade. In his student days, Mr. Cohen was editor of *The Tech*, and subsequently became instructor in the Department of English and History. For a number of years, Mr. Cohen was an engineer with the United Shoe Machinery Corporation. For the past few years his engineering and administrative abilities have been used to advance the interests of the Sperry Gyroscope Company.

Physicist's Phylon. — How well is the Institute fulfilling its mission in training students of physics? For the years 1934 to 1942, the record has been examined by PROFESSOR PHILIP M. MORSE who finds

(Concluded on page 8)



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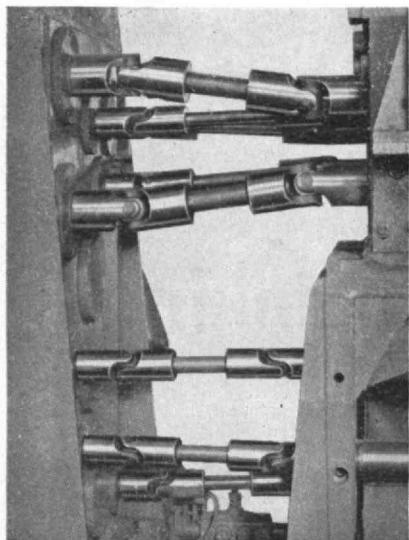
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THE TABULAR VIEW

(Concluded from page 6)

(page 29) that M.I.T. has contributed a disproportionately large share of physicists whose outstanding achievements are recorded in *American Men of Science*. In his article, "Graduate Students in Physics," Dr. Morse also hints that the record for the 1941-1951 decade may be even more impressive. Professor Morse has been a member of the Institute's Department of Physics since 1931, although his residence in Cambridge has been punctuated by leaves of absence to serve the nation elsewhere. In 1946, Dr. Morse became the first director of the Brookhaven National Laboratory, and in 1949 he was appointed research director and deputy director of the Weapons Evaluation Group of the National Military Establishment.

MAIL RETURNS

Memorial Concert

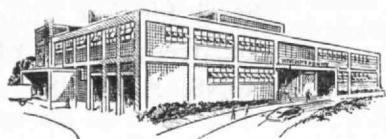
FROM MRS. DOROTHY C. REMICK:

Possibly some of the readers of The Review, especially those who may have been students at the Institute in the twenties and early thirties, may be interested to learn that a memorial concert is to be given for Stephen S. Townsend, Director of Choral Music at M.I.T. from 1924 to 1932. The concert will be held in Recital Hall, College of Music Building, Boston University, at 8:15 p.m. on Monday, December 3, and I understand that the program will consist largely of Mr. Townsend's compositions.

The concert will be open to the public, and all friends, former students, and pupils of my uncle's voice-training classes are cordially invited to attend.

If you find you will have space in your next issue for notice of this event, publication announcement will be greatly appreciated by all who are interested in the success of this memorial concert.

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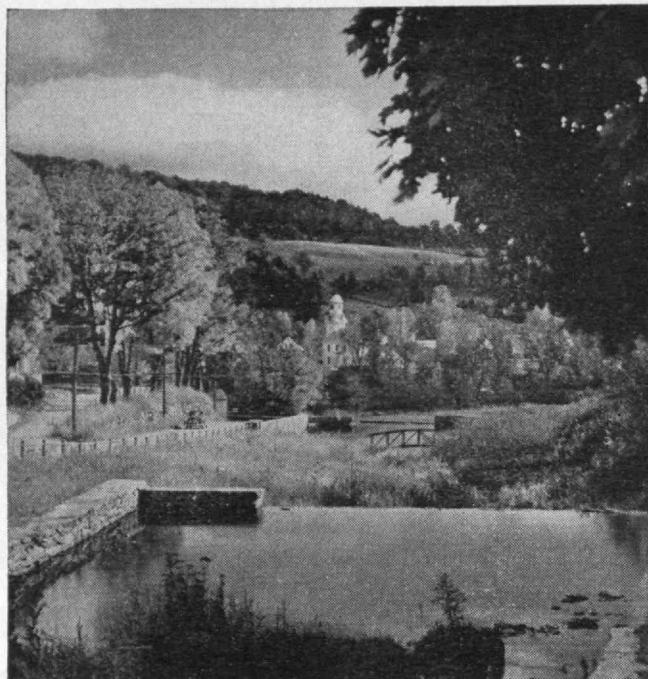
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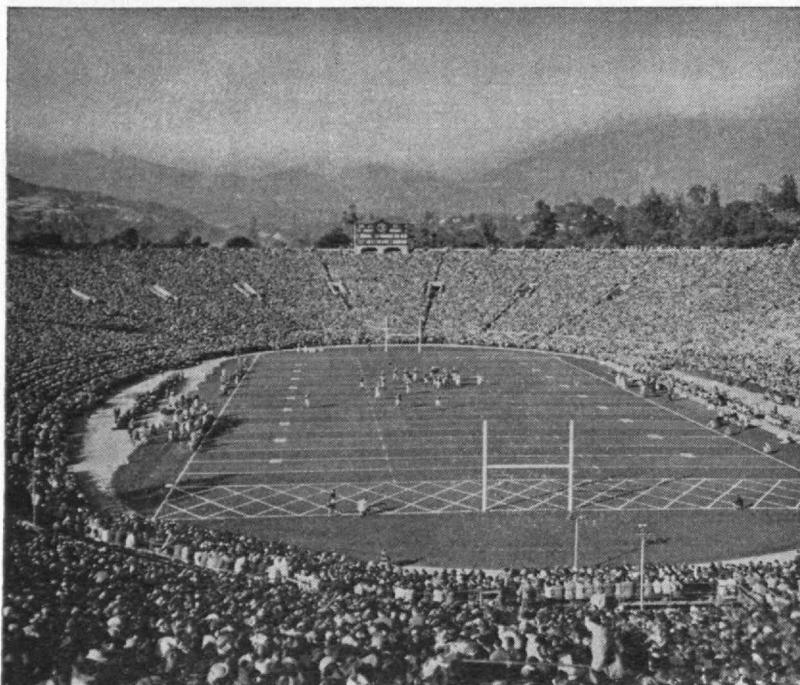


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Bet he took Advanced Highway Engineering!

THE TECHNOLOGY REVIEW

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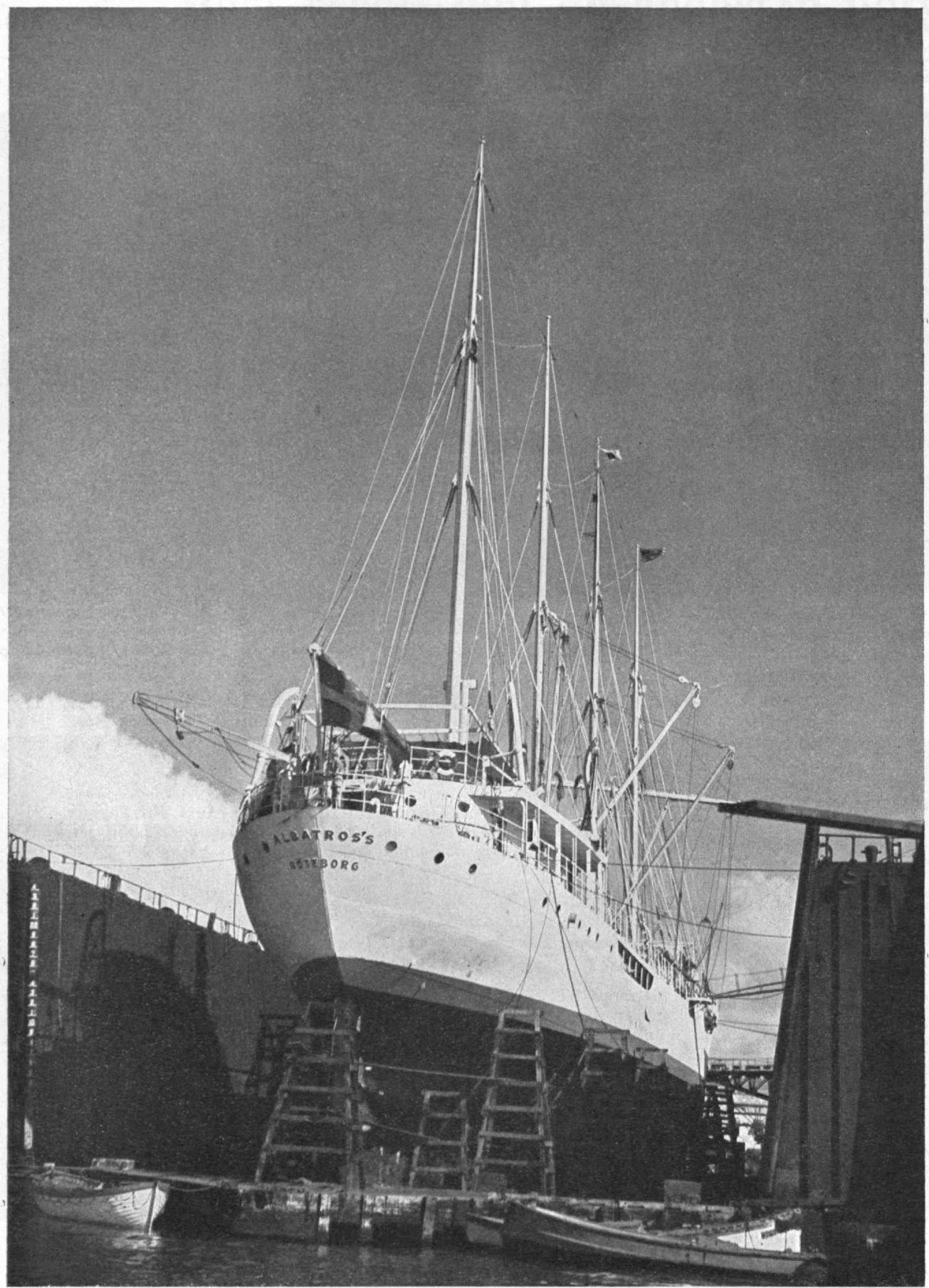
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C. E. Patch, '02

"We shall sail securely . . ."

— Henry Wadsworth Longfellow

THE TECHNOLOGY REVIEW

Vol. 54, No. 1



November, 1951

The Trend of Affairs

Wool Extenders

USING as a probe its merciless demands for more production, the current defense program has revealed one weak spot after another in our raw material situation. For a while, as wool prices rose to record levels, it appeared that this ancient fiber was in short supply. Basically it seems to be moving toward such a position, although prices have since fallen. American consumption, including that for the military services, is close to four pounds per capita, almost the weight of an average complete fleece. With about one-sixth of the world's population, the United States is currently consuming about a quarter of the world's wool production.

Fundamentally, the problem of wool supply stems from the fact that as the sheep population declines, the world's human population is growing. As sheep are crowded off the range by crops, or by animals more essential to human needs, the trend must continue. In 1940 there were 131,000,000 people in this country and 52,107,000 sheep. In 1951 the United States has 152,000,000 people and about 30,000,000 sheep. Even Australia (where there are 102,558,000 sheep today) had 106,420,000 in 1892, its peak year. In 1940 the world contained an estimated 2,080,000,000 people and 747,000,000 sheep. Ten years later, it contained 130,000,000 more people and 17,000,000 less sheep. World production during the early decades of this century was generally over three billion pounds per year. In recent years it has averaged several hundred million pounds less.

That these trends have not more severely affected the textile industry is due, of course, primarily to the rise of the synthetic fibers. To an increasing extent, the ersatz fibers are also being used as blending agents in wool. With some of the earlier synthetics the substitutes have not always represented a net gain in

quality, but an increasing number of fibers are being developed which share some of the warmth properties of wool, blend well with it, and tend to make a fabric which holds its shape better in humid atmospheres. In particular, these are the acrylic fibers, of which Dynel, Orlon, Dacron, and Saran are some of the varieties in the commercial or development stage. An output of about 100,000,000 pounds per year of such fibers, by 1953, is predicted.

Titrations with Phototubes

CHEMICAL analysis by titration always involves some method for the determination of the end point. The possibilities of a hitherto neglected method for this determination — measurement of light absorption — was explored in the Laboratory for Nuclear Science and Engineering by David N. Hume, Associate Professor of Chemistry, and Robert F. Goddu, '51, last year a research fellow in the Department of Chemistry. In this method, titrations are carried out inside a commercial spectrophotometer and the changes in the transmittancy of the solution being titrated are determined at frequent intervals. The method has been shown to be accurate and convenient for a wide variety of chemical analyses. The use of monochromatic light and a sensitive light-detecting system makes it possible to utilize very small, but important, color changes in deeply colored solutions. When ultraviolet or infrared light is employed, it is possible to determine end points by changes completely invisible to the human eye. Because of the high sensitivity of spectrophotometric measurements, it is possible to work with very dilute solutions and very small amounts of material.

Among the more interesting results found in the course of this investigation is the discovery that the method is suited to the accurate determination of

quite low concentrations of weak acids or bases in mixtures. The conventional potentiometric and glass electrode methods do not distinguish at all, for example, between two weak acids with ionization constants not differing by more than sixteenfold, even in fairly concentrated solutions. The photometric titration method, however, may give results accurate to a few per cent with dilute solutions of acids, the ionization constants of which differ only by a factor of 10. Another useful feature of the photometric titration method is that determinations may be carried out as easily in nonaqueous media as in water solutions, whereas the ordinary electrical methods are very difficult to apply except in aqueous solutions. Photometric titration promises to be useful in the solution of quite a number of practical problems, such as the determination of mixtures of weak acids or bases, determination of small amounts of strong acids in weak acids, and determination of weak acids in the presence of strong acids.

Safety in Nuclear Reactors

PRIMARY purpose of present-day atomic piles, or nuclear reactors, such as the new pile at the Brookhaven National Laboratory near Patchogue, Long Island, is the production of neutrons. These elementary particles are needed for such research purposes as experiments on matter to be carried out in the immediate vicinity of the reactor; the production of radioisotopes (chemical twins) for uses remote from the reactor; and the transmutation of uranium into plutonium for military purposes.

Great quantities of heat and copious amounts of penetrating gamma rays are by-products of the nuclear reactions for producing neutrons, and neither of these by-products can be very readily or safely dealt with. The gamma rays which accompany the production of neutrons are similar to x-rays corresponding to several million volts and can easily produce harmful effects. To avoid excessive and destructive internal

temperatures in the reactor, to provide the necessary safety to personnel, and, finally, to yield precision in experiments and production processes, the rate of neutron production must be very accurately controlled. The equipment required for measurement and control is not unlike that of a chemical production plant, although the speed of operations, the range of magnitudes to be measured and controlled, and the requirements for ruggedness of operation and safety to personnel pose problems in instrumentation not previously solved.

Instrumentation for control and monitoring of the reactor of the Brookhaven National Laboratory was designed and engineered by the Servomechanisms Laboratory at M.I.T., directed by Professor Gordon S. Brown, '31, of the Department of Electrical Engineering. This project, which employed approximately 50 persons for two years, was under the general supervision of William M. Pease, '42, Assistant Professor of Electrical Engineering. Design and construction of the electronic instrumentation for nuclear measurement and monitoring was directed by Truman S. Gray, '29, Associate Professor of Engineering Electronics at the Institute.

Information regarding the rate of neutron production, the temperature at various internal and external points, and the intensity of gamma rays emanating from the reactor is furnished by various electrical detectors located in and around it. In accordance with this information, control rods are inserted to limit the rate of neutron production.

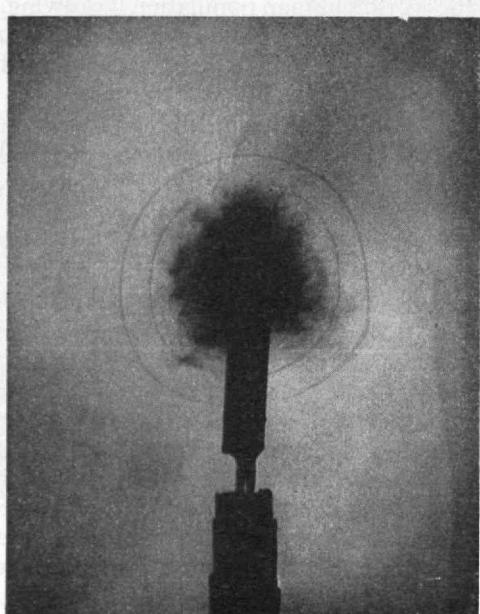
Safety to personnel and to the equipment is a prime consideration in the design of a reactor installation. A carefully engineered, rapid-acting, automatic-shutdown system, therefore, is an important part of the instrumentation. Failure or an excess of any one of numerous variables causes instant shutdown of the reactor. To minimize false shutdowns, the system has been designed to be rugged and positive in its action. The instrumentation techniques employed mark a new and significant advance in the safety and reliability of control for nuclear reactors.



The two shadow photographs shown here are recent examples of the work of Professor Harold E. Edgerton, '27, of the Department of Electrical Engineering, and his associates at M.I.T. Both have been made with exposures of 0.2 microsecond, using the recently developed magneto-optic shutter.

At left are two superimposed photographs of a No. 6 dynamite cap exploding. The interval between exposures was 10 microseconds.

At the right two superimposed exposures have been made of a black powder squid charge with a 16-microsecond interval between exposures. Note that the sound wave does not travel as far in this case as for the dynamite cap.



From Tape to Contour Cutting

IMPORTANT segments of the machine tool industry have long been engaged in extending the usefulness of machine tools through automatic controls of one type or another. The simpler and more obvious means of automatic machine control have been studied extensively over so long a period of time that further substantial progress along traditional lines may soon reach the point of diminishing returns. The next significant step forward will probably employ servomechanisms in addition to control methods which have been developed to a high degree during the past decade. In fact, under the direction of Professor Gordon S. Brown, '31, of the Department of Electrical Engineering, and William M. Pease, '42, Assistant Professor of Electrical Engineering, the Servomechanisms Laboratory at M.I.T., under the sponsorship of the Air Force, is now engaged in an active program devoted to improving the precision of control of automatic machine tools through techniques not yet finding much application in industry.

Under development at M.I.T. is a contour-shaping machine with a cutting tool whose position is controlled by digital information rather than the dimensions of a model, as used in presently existing automatic machine tools. This digital information, which is related to the desired shape of the metal, is inserted into the machine by means of a punched paper tape, somewhat like the tape used in automatic transmission of teletype messages. The information on the tape is interpreted by the "machine director," which comprises a group of 175 relays and 250 electron tubes. The machine director, in turn, controls the angular positions of three separate servomechanisms. By means of a lead screw arrangement, the angular displacement of the three servomechanisms determines the position of the cutting head in each of three orthogonal directions.

Information for punching the paper tape is obtained from the design specification or drawings for the desired part somewhat as follows: The desired path of the center of the tool as it passes over the work surface is first determined, making an appropriate allowance for the dimensions of the tool. The tool path is then divided into straight segments of any lengths which approximate the desired, generally curved, path within any tolerance specified by the designer. Each straight segment is resolved into three orthogonal components parallel to the ways of the machine tool. The numerical values of these three components are then coded appropriately and punched on the tape together with information as to how much time the machine should use in traversing the segment. Once properly punched, the paper tape provides a compact, permanent control record which may be used at any subsequent time in conjunction with the cutting machine to mill duplicate shapes. Because the coded symbols punched on the tape represent discrete numerical data, the position of the cutting head, instead of being infinitely adjustable, is moved in finite steps of 0.0005 inch each. (As differentiated from infinitely continuous operations, discrete step operations are commonly referred to as digital operations.) A consequence of the digital operation is that the ma-

chine does not accumulate any error exceeding one 0.0005-inch step regardless of the number of successive straight segments it traverses.

Directions for contour cutting are coded on the punched paper tape in blocks, each block containing the specification for one segmental path, together with codes which serve checking functions. The blocks of information are fed into the machine director intermittently as needed to keep the metal-cutting operation continuous. The machine director contains two relay registers, one of which controls the machine-tool motions while the other receives information from the punched paper tape. Rapid switching alternates the function of the two registers to provide continuous control of the machine tool.

The control devices which position the three elements of the machine tool are designed in the general pattern of military fire-control servomechanisms. The servomotors are small hydraulic transmissions which rotate lead screws to position the machine elements.

An application for which the machine under development is uniquely suited is that of machining straight-line-generated airfoil surfaces. Other applications include the more conventional tasks of template making, cam making, jig boring, and milling models for tracer-controlled contour-milling machines. The preparation of tapes for the machine will be preceded by large amounts of routine computation, and it is expected that economic considerations will make machine methods mandatory for this computation.

Improving Copper Smelting

QUANTITATIVE measurements of equilibrium conditions for chemical reactions in molten oxide and sulfide solutions, at temperatures of 2,200 degrees F. and above, are being made by a group under the supervision of Reinhardt Schuhmann, Jr., '38, Associate Professor of Process Metallurgy, as part of an investigation of the chemistry of copper smelting. Copper smelting is an old, well-established art, the procedure by which most copper is produced today having been developed largely by empirical methods and with only meager knowledge of the high-temperature physical chemistry involved. Although the process is relatively efficient and economical by present metallurgical standards, the decreasing quality of copper-bearing ores, increasing costs for fuels, labor, and other supplies, and emergency demands for the metal, all contribute to make the fundamental study essential as a basis for further development.

Copper smelting involves two principal steps, both carried out at temperatures so high that the products are molten. In the first or matte smelting step, copper sulfide concentrates and ores are heated with appropriate fluxes to produce a liquid matte (which is a solution of copper and iron sulfides) along with a waste slag consisting of silicon dioxide, iron oxides, and other worthless constituents of the ore. In the second or converting step, the liquid matte is oxidized with air, and fluxes are again added to obtain another iron silicate slag. When the oxidation is completed, the copper remains behind in the converter as a crude metal known as blister copper. This blister copper is subsequently cast and refined electrolytically to the

commercial high-purity copper. Both of the above described steps in making crude copper yield systems containing two reacting liquid phases: a sulfide or matte phase and an oxide-silicate or slag phase.

It is expected that the research program now in progress will afford a quantitative understanding of the reactions and the conditions under which slag losses occur so that it may be possible to devise controls or preventatives. From a long-range point of view, a thorough understanding of the chemistry of mattes, slags, and matte-slag reactions quite possibly will contribute to some radical changes in the smelting procedure as a whole. To date, the laboratory investigations have dealt chiefly with the constitution and chemical properties of iron silicate slags. One of the first problems was to find the ranges of composition and temperature under which the slags exist and to determine also the temperature and composition conditions under which they exist in equilibrium with solid phases, such as magnetite and silica. Since iron is present in the slag, in both ferrous and ferric states, the liquid iron silicates must be regarded as ternary solutions of ferrous oxide, ferric oxide, and silicon dioxide. Therefore, it has been necessary to work out rather completely the constitution of the ternary system at temperatures from 1,200 to 1,400 degrees C. The results show that copper-smelting slags cover a larger range of ferric oxide content than was previously supposed, and that the content of ferric oxide has very significant effects on slag properties. Another feature of the results, which has a direct bearing on the magnetic accretion problem, is the finding that the solubility of magnetite in the slags is quite sensitive to temperature within the usual smelting range.

Revolution in the Making

As a result of research work under the direction of William Shockley, '36, significant advances in the development of a tiny amplifying device, which has been called the first serious rival of the vacuum tube, have been announced during the summer by the Bell Telephone Laboratories. Most important of these ad-

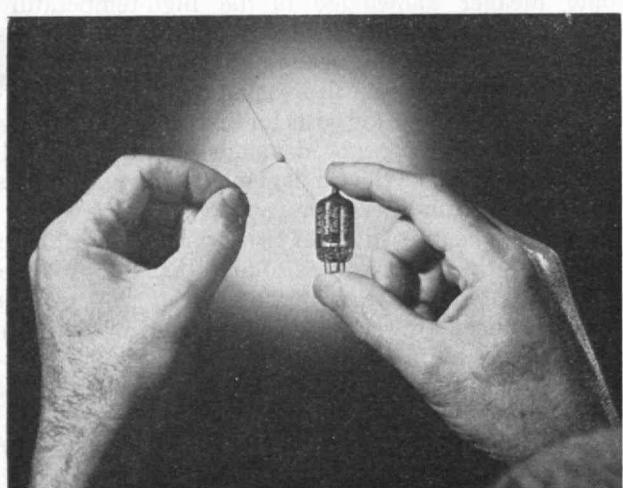
vances is the construction of operating samples of a radically new type of amplifying device, called a transistor, which has astonishing properties never before achieved in any amplifying device. Dr. Shockley, who initiated and directed the research leading to the original transistor, predicted the new type more than two years ago, as a result of theoretical studies.

In addition to making vast improvements in the performance and uniformity of the original transistor, a radically new and in many ways more effective type of amplifier, called a junction transistor, has been the result of Dr. Shockley's work. Extremely efficient and rugged, the new junction type of transistor is in the form of a small bead, about half the size of a pea. Transistors have been produced which can withstand shock and vibration better than any known vacuum tube and they are expected to have a service life considerably longer than that of commercial vacuum tubes in current use. The transistor can be designed for a great many specific functions, and its range of performance has been extended to include a wide variety of applications which at present require commercial tubes of the well-known vacuum type.

The junction transistor has no point contacts, which in the original transistor corresponded to the terminals of a vacuum tube. Instead, it consists of a tiny rod-shaped piece of germanium, treated so that it embodies a thin, electrically positive layer sandwiched between the two electrically negative ends. The entire rod is encased in a hard plastic bead about three-sixteenths of an inch in diameter, with wire leads connected to each of the three regions and extended outside. This new form of transistor occupies about one four-hundredths of a cubic inch, whereas a typical subminiature vacuum tube occupies about one-eighth of a cubic inch.

Power consumption of this new type of transistor is remarkably low. The signal level often found in modern electronic equipment is about one millionth of a watt. But a full watt of power is ordinarily required by conventional vacuum tubes to amplify this signal. This is about like sending a 12-car freight train, locomotive and all, to carry a pound of butter. The new transistor, unlike any earlier amplifier, can be operated with a power of about a millionth of a watt, which is just sufficient to carry the signal.

Transistors can be operated as amplifiers for telephone and television circuits, and to provide the functions of detection and amplification such as are found in an ordinary radio set. One type also serves as a photoelectric device. These devices are still undergoing exploratory development. While more complete information on the properties which may be achieved will be available after further development, the results to date are encouraging. It is always dangerous to make predictions, but the new devices have such desirable properties and characteristics that they may well cause a revolution in a wide variety of electronic, communication, and measurement techniques. The transistors do not require power for heating, and therefore can be operated without the delay required for warm-up. The small size, ruggedness, and expected long life of the transistors make them eminently suitable for many applications in which the usual vacuum tubes are not suitable.



Bell Telephone Laboratories

The spidery object at the left is the newest type of transistor, a tiny amplifying device of rugged construction which requires no heater or filament. For size comparison, note the miniature tube which does about the same job.

IN 1914, A. Lawrence Lowell, Harvard University's President, began an address to an M.I.T. alumni gathering by telling a story appropriate to the relations between Harvard and M.I.T. "I am reminded of the man," he said, "who asked his friend, 'What is the difference between a terrapin and a seraphim?' 'Well, I don't really know,' the friend replied; 'I believe there was a difference at one time, but I understand they have since made it up.'"

That year, 1914, is a significant one in M.I.T.-Harvard history. M.I.T., then in Boston, had decided to move to Cambridge. All talk of a merger of M.I.T. with Harvard had by then been settled in favor of no merger; and the two educational institutions, which were soon to be neighbors in Cambridge, had



Walter R. Fleischer

Good Neighbor Policy in Cambridge

entered into an arrangement whereby their work in certain fields would be combined. That particular co-operative plan — which I shall refer to again later — was short-lived. But the good-neighbor policy which it inaugurated has continued to this day. I shall venture to review the evolution of this good-neighbor policy.

The story of the M.I.T.-Harvard relationship throughout the years since the Institute's founding is apt in illustrating how "good fences make good neighbors" — even when students sometimes weld the gates shut with thermite. It is also instructive as a case history of how two institutions, one venerable and comprehensive, the other young and specialized, both pre-eminent in their respective fields, have created an environment benign to co-operation. What has been achieved in Cambridge is a commonwealth of scholarship. Two strong, independent, individualistic institutions, vigorously competitive where need be, have forged an intellectual federation which makes Cambridge one of the great centers of learning and research in the world. Even though the two institutions remain jealously independent, they have been creating together a University of Cambridge — an entity which is the more effective because it has no corporate existence except as a willingness to collaborate among a community of scholars.

It is important, I think, to keep in mind that this kind of a relationship does not just happen. Nor is it the kind of association that can be imposed by fiat. It is a relationship which has roots in the past and which has been carefully nurtured. The elements which make it what it is are like those of which Winston Churchill spoke in remarking that the "fraternal association" between the United States and nations of the British Commonwealth is more effective than many associations made through formal alliances. "Peoples

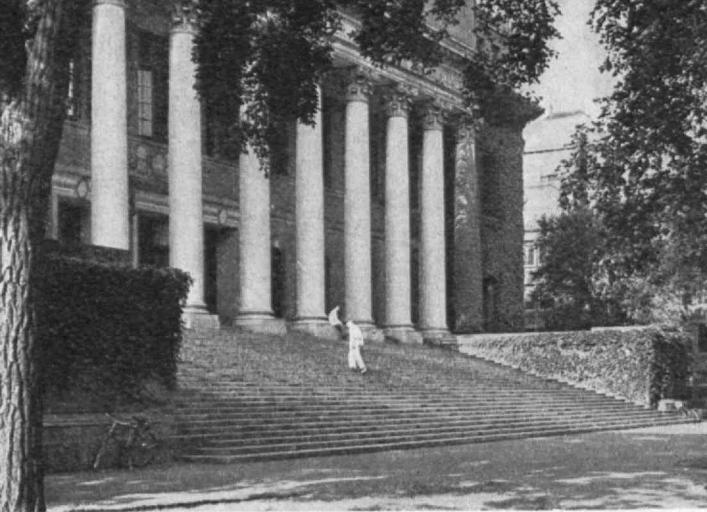
*Two institutions on the Charles River,
One venerable and comprehensive,
The other young and specialized,
Have created an environment
Benign to co-operation.*

By JAMES R. KILLIAN, JR.

of these countries," Churchill said, "know each other particularly well and are old friends . . . their families are intermingled . . . they have faith in each other's purpose, hope in each other's future, and charity towards each other's shortcomings."

What is the history of this fraternal association? It did not open altogether auspiciously. Even before M.I.T. held its first class there was a suggestion that it be joined with Harvard. The Commonwealth had granted M.I.T. a charter on April 10, 1861, on condition that a guaranty fund of \$100,000 could be raised within one year. April, 1861, was the month Fort Sumter was fired upon. It was not a good month to start seeking funds for a college; but then, it never seems to be a good moment for that. Because of the Civil War, an extension was granted M.I.T. in obtaining funds. The next year the first Morrill Act was passed by Congress, which donated public land to the states, revenue from the sale of which was to be used for the establishment of at least one college which would teach subjects related to agriculture and the mechanical arts. Governor John A. Andrew brought this act to the attention of William Barton Rogers, President of the Massachusetts Institute of Technology, which was then a paper corporation but nothing else. The Massachusetts governor had a great plan. He proposed that the Massachusetts portion of the money be used for a union of all the educational organizations in the Boston area, including the new Institute and a new agricultural college. It was the governor's idea that this great educational organization be centered around Harvard. What Harvard's reaction to this plan was, I do not know; perhaps it never got beyond the original suggestion to Rogers. In any case, President Rogers politely, but firmly, turned it down. As it turned out, it was this first Morrill Act that helped save M.I.T. from floundering completely in those early days, since the Institute, in the end, did receive part of the grant.

The suggestion that M.I.T. and Harvard be joined became a recurrent theme throughout the next 50



Walter R. Fleischer

Corinthian columns of Widener Library mark an important center of education at Harvard University . . .

years. Whenever there was a slump in the business cycle, there would be someone on the M.I.T. Finance Committee who would look wistfully up the Charles and start thinking what a fine match it would be for M.I.T. to become wedded to that wealthy institution. And, too, there were times when someone at Harvard would decide that the Lawrence Scientific School was not as strong as it might be. Then he would say: "Now I wonder if we couldn't persuade those Boston Tech people to come up here and become the School of Engineering and Science at Harvard."

The plot thickened in 1869 when Harvard elected Charles W. Eliot president. Where had they found him? At M.I.T., where he was professor of analytical chemistry and metallurgy. Nor is it without interest that when Eliot had been debating whether or not to join the Institute Faculty in 1865, a Harvard friend, Ephraim W. Gurney, had written to him, urging him to accept on the grounds that the direction of M.I.T. after Rogers should have passed off the stage might be as desirable as almost any educational post — and then Gurney added, "except that one out here in which I am determined to live to see you."

Soon after President Eliot's inauguration, he made his first serious effort to bring M.I.T. to Harvard. Perhaps he was homesick. William Barton Rogers, the founder of M.I.T., was still having more than the usual presidential worries over funds for his five-year-old college, and he knew President Eliot well and admired him. But of the proposal for a merger he said:

I can see nothing but injury to the Institute from the projected change. The Institute has already taken the first place among the scientific schools of the United States, and, if untrammeled, will evidently continue to grow in reputation and numbers. Those who know our history know that this success is due to the opportunity we have had under the inspiration of modern ideas. No kind of co-operation can be admitted by the Institute which trenches in the least degree upon its independence. What is alone desirable is a friendly working of the two institutions in their respective spheres.

It is interesting in this connection to recall that President Eliot, before he went on the staff of Technology, had taught mathematics and chemistry in the Lawrence Scientific School at Harvard. While in that position he had come to know William Barton Rogers, who had been a member of the committee appointed by the Overseers of Harvard to visit the school while

Eliot was teaching there. At that time Charles Eliot had drawn up what was, for then, a radical suggestion for the reorganization of the Harvard school. In James's biography, we learn that the plan as drafted by Eliot carried the following note: "I made this plan in the year 1861-62 when in charge of the laboratory of the Lawrence Scientific School. In 1864-65 the Institute of Technology was started very much after this plan." Certain it is that Eliot and Rogers had talked about the new importance of scientific and technological education, and agreed that those who studied in these fields should be broadly educated men as well as specialists. Certain it was, too, that Eliot had been influenced by the plan for a polytechnic school which Rogers had drawn as early as 1846.

After President Eliot suffered his first setback in carrying out his plans for a union of M.I.T. and Harvard, he made the Lawrence Scientific School a school of applied science, and succeeded in getting fundamental science transferred from its separate place in the scientific school into the college curriculum.

In 1893, when Francis Amasa Walker, the economist, was president of M.I.T., the question of whether M.I.T. should be made part of Harvard University arose again. This time the discussion was enlivened by a debate in the pages of the *Atlantic Monthly*. The dean of the Lawrence Scientific School was then Nathaniel Southgate Shaler. Dean Shaler threw down the challenge. In an article entitled "Relations of Academic and Technical Instruction," he made the case for having technological education carried out in connection with a university.

That was in August. In the September issue of the *Atlantic*, President Walker's article, "The Technical School and the University," made it clear that this was an M.I.T.-Harvard debate. President Walker began on this disarming note: "If any large part of Professor Shaler's position can be maintained, we are offenders against the cause of sound education. It is our duty at once to seek the sheltering arms of the nearest university; or, if there be none near enough to take charge of us, then we ought to disband, and send our students to those who can do better by them." Then, questioning whether a scientific school fared as well when connected with a university as when independent, he spoke of his own eight and one-half years of experience at the Sheffield School at Yale University: "So little had the school, in its early days, been considered by the corporation," he wrote, "that when the Battell Chapel was erected about 1873 no provision was made for giving the Sheffield undergraduates seats in it. . . . For myself, I believe that scientific and technical education always encounters a grave risk when put out to nurse with representatives of classical culture."

The next president of M.I.T. was a graduate of the Lawrence Scientific School and had taught there one year. James M. Crafts became president of M.I.T. in 1897. In his Report to the Corporation of 1898, he told of the negotiations which had taken place that year with Harvard, with a view to transferring to the Insti-

just as the Ionic columns under the Great Dome represent the focal point of learning at the Institute

tute the courses in civil, electrical, mechanical, and mining engineering, metallurgy, and architecture then being given at Harvard, as well as the use of the income from certain funds destined to the support of the courses. The Report continued:

It is impossible to give here the details of a long and friendly discussion in which the end held in view was the advancement of education and the diminution of undue rivalry; but in order to understand the eventual failure to carry out an agreement, it is necessary to say that the University Committee put forward the view that the charge of technical studies properly belongs with a university and that a union, however slight it might be, between the University and the Institute was desirable. The Institute Committee insisted upon the absolute independence of its government and believed that condition to be most favorable to the free development of studies in a school of applied science.

The most interesting part of the Report of the Institute Committee, which had carried out the negotiations, is the note on which it closed:

Although the result has disappointed our expectations, we still feel convinced that as friends and earnest promoters of instruction we can so direct the course of our respective institutions that they shall mutually help one another and avoid duplication of work. It is possible that such a result may be better attained by a friendly interpretation of our common purpose than by any attempt at a formal agreement. Your committee are encouraged in this hope by the very friendly acknowledgement of their reply to the Corporation of Harvard, which reads: "The President and Fellows regret that the alliance with the Massachusetts Institute of Technology proposed by them in a communication dated April 12, 1897, has failed. The President and Fellows cordially recognize the friendly spirit of the letter of the Committee of Conference of January 10, 1898, and will at any time meet the authorities of the Massachusetts Institute of Technology in consultation, for the purpose of avoiding unnecessary duplication of instruction."

By 1902 it had become clear to those connected with the Institute, or Boston Tech, as it was often called in those days, that the Back Bay location did not allow enough room for the expansion called for by the growing school. Debate about the future site and uncertainty over the future, marked the years from then until 1911, when the present Cambridge site was chosen.

Closely allied to the question of where to move was the suggestion, now raised with renewed insistence, for a merger with Harvard. A new reason had been added. In November, 1903, the will of Gordon McKay had been probated; and income from his endowment to Harvard was to be used for instruction in applied science: in particular, mechanical engineering. In November, the will was probated. The following January a new proposal for a merger of M.I.T. and Harvard was under discussion, and in May the first formal step was taken. A resolution passed by the Corporation of the Institute requested the Executive Committee "to ascertain whether any arrangement can be made with



M.I.T. Photo

Harvard University for a combination of effort in technical education, such as will substantially preserve the organization, control, traditions, and the name of the Massachusetts Institute of Technology."

And who were the members of the Institute committee appointed to negotiate? The then President of the Institute, Henry S. Pritchett, and a member of the M.I.T. Corporation's Executive Committee — A. Lawrence Lowell.

A. Lawrence Lowell had been a member of the Corporation of the Institute since 1890, and for four years was a member of the Executive Committee. His grandfather, John A. Lowell, had been vice-president of the Institute from 1862 to 1870. His father, Augustus Lowell, had been a Corporation member. His brother, Percival, was the nonresident professor of astronomy in 1902 and later a member of the Corporation. As Lowell was to point out after he became president of Harvard, even his brother-in-law was a member of the M.I.T. Corporation. Nor does the Lowell connection end here. His nephew, Ralph Lowell, is at present a member of the M.I.T. Corporation and its Executive Committee.

At the time of these negotiations, in 1904, A. Lawrence Lowell was Eaton professor of the science of government at Harvard. The plan for a merger of the two institutions was one dear to his heart, and his biographer has said that his failure in this respect was one disappointment to which he was never reconciled. He once told a friend: "I have lain awake just two nights. One was about the Technology affair — and I have forgotten what the other was about."

In 1904-1905, President Pritchett's Annual Report gave the text of an agreement which had been drafted by the joint committee. By this time the Alumni of M.I.T. had been aroused and were becoming vocal in opposition to any merger. While the Institute would be semi-independent, retaining its name and its charter, the plan proposed that it move to a site on the Charles River opposite Harvard — probably the site of the present Harvard Business School. It would replace the Lawrence Scientific School and absorb its faculty, but Harvard would have control over its affairs.

As it turned out, the decision was made not by the Alumni or presidents, but by a decision of the courts which brought into question M.I.T.'s right to sell its land on Boylston Street in Boston. This decision made it necessary for President Pritchett to notify President

Eliot that it would be impossible to proceed with the plan for the proposed alliance. That this was a great disappointment to President Pritchett is indicated by the fact that when he wrote to Lowell to congratulate him on assuming the presidency of Harvard, he said: "What a pity we hadn't carried out the Harvard-Tech alliance."

In 1909, Richard C. Maclaurin was inaugurated as president of M.I.T., one month after A. Lawrence Lowell had assumed the presidency of Harvard. The merger question was still not dead. Maclaurin took the helm at the Institute at a time when great plans for a new campus were accompanied by a severe lack of funds. There were many who were ready to help the Institute with its plans for expansion, if it would be sensible and join with Harvard. However, the matter of a new campus for M.I.T. was soon settled by the mysterious Mr. Smith, whose gift of money made it possible to plan a new and more ample M.I.T. in Cambridge.

In a speech to a reunion banquet in 1909, President Maclaurin had had this to say about M.I.T.-Harvard relations:

There will be no more talk of merger with Harvard, but I think we should be false to every precept of decency if we did not reciprocate most heartily the genuine expression of good will that President Lowell has so recently made, and I think we should be equally false to every precept of common sense if we failed to do our utmost to co-operate with Harvard wherever such co-operation is possible. I believe that in the domain of applied science there is much that we can do for our mutual help, but to make co-operation real and practical, we must be strong enough for independence.

And in President Lowell's report for 1911-1912, he said: "No plan of co-operation has been devised, but the difficulties ought not to be insuperable if approached with mutual good will and a sense that an educational institution does not exist solely for its own glory, but as a means to a larger end."

The merger question was settled once and for all, as President Maclaurin had said; but common sense still dictated that ways should be explored to prevent unnecessary duplication by the two neighboring schools. Once more an attempt was made to work out a plan whereby the schools of engineering would be joined. This time the negotiations were successful.

Early in January, 1914, came the announcement of a co-operative agreement between Harvard and M.I.T., whereby Harvard's courses in applied science would be carried on at the Institute. The Harvard faculty in engineering would work at M.I.T., but would retain their titles as members of the faculty at Harvard Uni-



William Barton Rogers



John Harvard

Although neither was a native of New England, the founders of M.I.T. and Harvard University initiated educational reforms which were to make Cambridge an important center of learning in the United States.

chanical, electrical, civil, sanitary, and mining engineering and metallurgy might elect to be candidates either for a Harvard University degree, for an Institute degree, or for both. They were to be entitled to the privileges of students in the professional schools at Harvard. Income from the McKay trust was to go toward the support of this school, as well as any other funds of the University or the Institute which were specifically designated for work in these fields.

President Maclaurin, in announcing the agreement, said: "Perhaps the most important outcome of the negotiations that have led up to this agreement, will be the proof to the world that great educational institutions do not shape their policies from selfish points of view. They think above all of the good of the community."

A poem by Edward S. Martin on the editorial page of the old *Life*, celebrated the occasion as follows:

The lion with the lamb lies there
And neither one inside:
The Harvards skip a lot of care,
The Techs conserve their pride.
Instead of spending heaps of dough
Each other's weal to check,
The Techs at Tech to Harvard go
The Harvards tech at Tech.

The joint school was short-lived. In November, 1917, the Supreme Judicial Court of the Commonwealth decided that the arrangement did not carry out the wishes of Gordon McKay and directed Harvard not to use the income from his trust in this way. That decision spelled the end of the joint school. But it was the beginning of a new era of co-operation between the two institutions, a co-operation which continues today.

To complete the story requires a postscript. Last year a distinguished panel, appointed by James B. Conant, President of Harvard, submitted to him a report on how Harvard could most effectively develop applied science under the now completed McKay bequest. Included in its recommendations are suggestions for concentrating Harvard's work in engineering in fields in which it can make an outstanding contribution, especially in educating men who can rise beyond their particular specialization, and bring a broad vi-

(Concluded on page 62)

versity, in addition to acquiring similar titles at the Institute. Of the 16 Harvard faculty members affected when the agreement took effect, six had already been associated with the Institute on its instructing staff, and four of them were Technology graduates.

Students who enrolled in the courses leading to degrees in me-

Some Thoughts on Natural Flight

*For All His Accomplishments in Aircraft Design,
Man Is Yet No Match for Nature in Producing
Flying Machines of Great Versatility*

By JAMES L. G. FITZPATRICK

THE flight of birds and insects has endlessly challenged man and defied his genius for imitation. Their mode of flight, by gliding and the beating of wings (giving rise to aerodonetics and "orthopterics," respectively, if a coined word may be used), still provides interesting possibilities for the improvement of modern aircraft, and for the extension of air-transport services to fields as yet untouched. Among the many writers who have discussed these possibilities^{*} is William B. Stout.¹ The consensus of these writers is that the versatility of nature's aircraft is unmatched. Their landing and take-off maneuverability are the envy of every designer. The flight of small birds over thousands of miles of open ocean is a marvel of airworthiness and economy of power. In such flights, birds frequently perform miracles of navigation as, for example, pinpointing a small ocean island. Their mastery of the air, the surface of the sea, and, in some cases, the waters beneath it, is the inspiration of countless inventors.

That the bird was man's teacher in the difficult art of flight is well attested by history. There is some doubt, however, about the conditions under which we students left nature's flying school. Did we graduate or are we still truants from the early grades? Does Professor Bird, in his feathery academic gown, still have a few tricks up his wing? Is Doctor Bug the last word on hovering flight? Alfred R. Weyl² and S. Paul Johnson,³ '21, are among those who feel that these patient teachers have still much to impart to man by their examples.

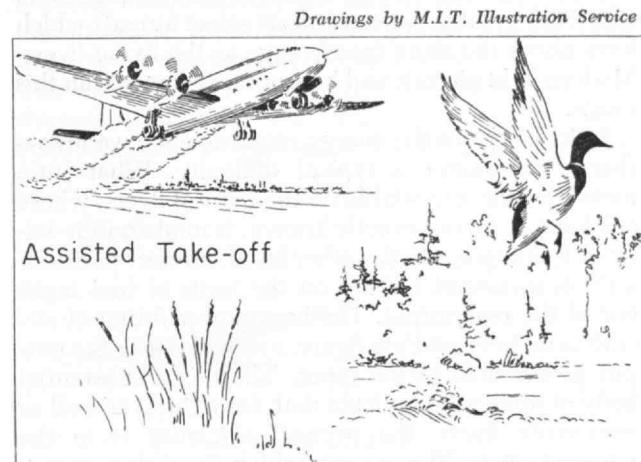
Our present understanding of natural flight is most limited; yet, over the years much careful and scholarly work has been done. A large number of inventors have sought to apply the scant store of knowledge to the complete duplication of the bird's flight performance. In addition, a number of successful design details have been advantageously copied from the bird. Among these may be mentioned the slotted wing, which reduces or eliminates the dangerous loss of control experienced at low speeds; the retractable landing gear; the fairing or smoothing of the wing to body joints to reduce resistance; the tapered wing form; the bleeding of small quantities of air through the wing surface to retain smoothness of air flow; the folding wings to improve ground handling and storage problems; and the catapult take-off. These and many other details may be credited to Professor Bird and his colleagues. In some cases, man has been clever enough

to learn directly from his classes, as the illustrations indicate. In other cases, knowledge has been acquired in the dolorous school of hard knocks. Some of the knocks have been whoppers against terra firma!

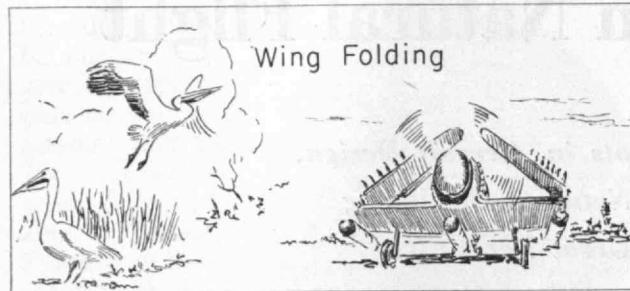
The most complete and comprehensive texts on natural flight ever published, to which the late Antoine Magnan, a professor at the College de France, made extensive contributions, are published in French. An important recent addition, in Dutch, to the literature is E. J. Slijper's *De Vliegkunst in het Dierenrijk (Flight in the Animal Kingdom)*.⁴ The extent of the literature on the subject may be gathered from the fact that more than a thousand bibliographical references can be compiled.

Studies of natural flight have suffered primarily from a lack of integration. The several sciences involved introduce numerous specialized jargons which restrict progress; by comparison, the Tower of Babel seems a small problem. Nevertheless, the study of natural flight is a fascinating subject and the summation of many respected opinions indicates that solid advantages will accrue from its pursuit. A brief review of some of the principal features of the problems of natural flight may indicate both the promise of progress which this field can offer and the obstacles which must still be overcome. In any case, a fresh point of view is always stimulating and often points the way to new progress.

For such a brief exploration of orthopterics, we may divide the subject into four parts, corresponding to the major scientific areas encountered: (1) biology; (2) aerodynamics; (3) engineering theory; and (4) engineering construction.



* Please see page 56 for numbered references.



Biology deals with the structural and functional adaptations which allow the creature to fly.

Aerodynamics is concerned with such questions as the details of air flow around the beating wings and the body of the flying creature, and the pressure and energy distribution in the air as affected by the passage of flapping or gliding bodies. When biology is combined with aerodynamics, we can begin to expect answers to such questions as: How much energy is needed in natural flight? How efficient is the biological flying machine?

Engineering theory develops hypotheses of design as we gain an understanding of the aerodynamic and biologic fields. It helps to determine whether there appear to be any limitations to the use of the orthopter type of flight mechanism on a large scale.

Engineering construction determines how we can apply the engineering arts to test the design hypotheses and how we can solve the problems of increased size. As applied to natural flight, this study opens up the possibility of a whole new field of engineering, based on knowledge of the welter of sinews, bone, chitin, and flesh.

Even a list of the outstanding detailed problems of each of the four divisions would require so much space as to tire the patience of the reader. Accordingly, one typical problem in each of these four fields will be selected for comment. The problems selected have a history which indicates that they have prodded man's mind generation after generation, like an uneasy cosmic conscience.

Biological Basis

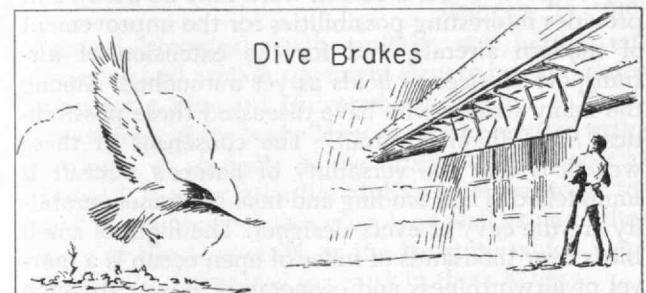
In the biological area, we shall examine the problem of the power or energy demanded for the natural flight of birds. The interest lies in the comparison of natural, with man-made, aircraft. While weight and size differ greatly, we can at least select aircraft which have about the same speed range as the living flyers. Modern light aircraft and helicopters come within this range.

In looking into the energy requirements, we immediately encounter a typical difficulty. What little measurement is available on the natural flyers, whose efficiencies are not exactly known, is made on the basis of fuel input. On the other hand, aircraft performance is measured neither on the basis of fuel input nor of the real output. The horsepower rating of aircraft is an intermediate figure, much closer to the output power than to the input. There is a substantial body of opinion to indicate that, for natural as well as man-made flyers, the over-all efficiency is in the range of 20 to 30 per cent, which figure we accept,

with reservations, for our comparisons. Lifting power will be expressed in British thermal units per hour, per pound lifted (B.T.U./hr./lb.) or in pounds lifted per horsepower (lbs./hp). In aeronautics, the latter standard is referred to as the power loading. The preferred term will depend upon the nature of the experiment under discussion.

The direct-energy measurement in the bird is very recent. Oliver Pearson⁵ describes a study of the flight metabolism of the hummingbird and finds that, during hovering flight in a bell jar, these tiny creatures consume energy at a rate varying from 200 to 1,400 B.T.U./hr./lb., with an average of 726 B.T.U./hr./lb. In a hovering state of flight, a modern helicopter will use energy at the rate of approximately 750 B.T.U./hr./lb.

Energy consumption of insects in flight has also been measured by R. A. Davis and G. Fraenkel,⁶



L. E. Chadwick and Darcy Gilmour,⁷ and August Krogh.⁸ The insect is attached to a small rod by adhesive and buzzes violently when lifted clear of support. Measurements under such conditions show average rates of energy consumption to be close to that of the hummingbird. The low figure here is 180 B.T.U./hr./lb. Antoine Magnan⁹ supported insects similarly, but measured the output energy present in the stream of air passing away from the insect. On the assumption of 25 per cent efficiency, Magnan's observations represent average input power of 170 B.T.U./hr./lb. All measurements are at least of the same general magnitude. It is perfectly obvious, however, that direct comparison among helicopters weighing two and one-half tons, hummingbirds of five grams, and insects at only a fraction of this, leaves much to be desired. Yet it is only at a most recent date that we have been able to proceed this far.

Otto Lilienthal,¹⁰ the great and enduring pioneer of aviation, made experiments with a man-driven, beating-wing device suspended by a counterweight system. Lilienthal found that a lift equal to 70 pounds per horsepower could be obtained, which is equivalent to about 110 B.T.U./hr./lb. In my own experiments, with an artificial batlike machine, the rates in hovering ranged from 100 to 200 B.T.U./hr./lb.

All of the preceding measurements refer, of course, to hovering flight or something which resembles it. Logically, we should now recite and compare the figures of direct measurement for normal flight; but, unfortunately, there are none.

The other extreme, from the high-energy rate of hovering, is the gliding condition. In this area, recent pioneer work by August Raspet of Mississippi State

College comes to our rescue.¹¹ The reports on his method tell of following a gliding buzzard with a fully instrumented sailplane. Bird and sailplane performance are telephoned to ground observers by radio. The experiment is conducted to allow subsequent accurate determinations of the speed and rate of fall of the bird. His flight behavior, wing positions, and so on, are a matter of record. Dr. Raspet finds that the power used by the gliding birds is equivalent to sustaining 268 pounds with one horsepower at a speed of 30 miles per hour (1,850 feet per pound per minute for a bird weighing 15 pounds). This is equal to about 38 B.T.U./hr./lb. A modern light airplane requires about six times as much power.

On the other hand, measurements of birds, or solid models of birds in wind tunnels, have not been too encouraging. Joseph L. Nayler and L. F. G. Simmons,¹² and Wynn L. Le Page¹³ measured an Alsatian swift and an Indian cheel [chil] in the tunnel of the British Aeronautical Research Committee. Their results indicate that about 16 pounds could be sustained per horsepower output, or that power consumption was roughly 600 B.T.U./hr./lb. Theories have been advanced which may account for the wide discrepancies between measurements made in open air and those conducted in wind tunnels.

Based on theoretical considerations alone, controversies have raged for a century and a half on the matter of power consumption. In this period, mathematicians and others have had a field day which, at times, resembled a free-for-all. It is clear from the previous discussion that only in the last decade have direct measurements been made to check theory against experiment. Nonetheless, we owe a debt of gratitude to all — experimentalists and theoreticians alike — for

subsequent air flow through the center section may be regarded as potential regenerative energy, since it moves in the direction of the aerodynamic reaction and thus offers the possibility of recapture. It is commonly accepted that one of the reasons for the V formation in flocks is that birds in the rear "recover energy" from the wake of those in front, or at least are not required to spend as much energy in flying as the leader at the point of the V.

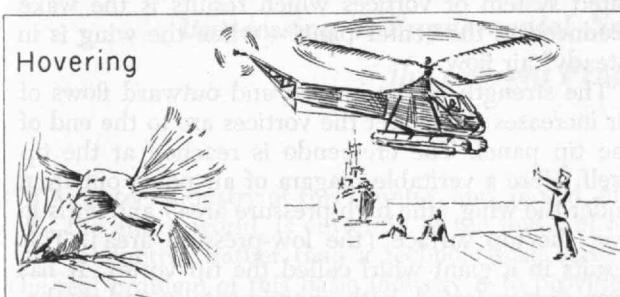
Lilienthal, already mentioned, was the early proponent of the importance of the oscillating flow of air on the wing. His calculations for a man-carrying, glider-launched machine would also be near approximate figures given by Raspet. Many others, such as Werner Schmeidler,¹⁷ Isadore E. Garrick,¹⁸ and Alexander Lippisch¹⁹ give similar low-power requirements arrived at by calculation.

Louis Bréguet, versatile and venerable giant of French aviation, exposes another approach in *Le Vol à Voile Dynamique des Oiseaux*.²⁰ He expresses mathematically the well-supported opinion that the bird is able to extract energy from the roughness or turbulence of the atmosphere. Such soaring, aptly called dynamic soaring, is not to be confused with soaring near obstructions, soaring in thermal updrafts, or soaring in shearing layers of air having different velocities. In many cases, the energy extracted might be sufficient for steady flight, which need not be with the wind. Bréguet's estimate was that a great deal of power could be saved if a machine could be properly constructed to recover and use energy of turbulence.

It is most fortunate that the fledglings do not have to agree on the theory of flight before making their first trip from the nest! Man has certainly had his difficulties with the theory of flight, but even experimental results have caused many a headache. The wide disagreements among experimental results exhibit our present ignorance and hinder progress. New light is being thrown on the problem constantly, but the workers are few. Yet, here is a field in which the lack of success of some ill-considered past efforts has too often blinded research personnel to genuine and attractive possibilities.

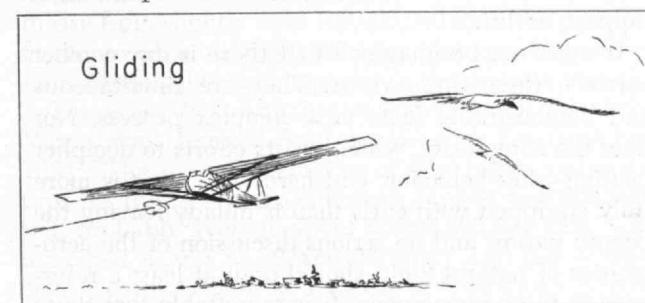
Aerodynamics

We move now to consider a problem in aeronautics, a subject which has been developed by mathematicians and the wind-tunnel research workers, often working independently and strictly without adequate liaison among their respective groups. At best, there are severe limitations on the work to be accomplished. The mathematician finds large numbers of variables intractable. On the other hand, the wind tunnel is such an expensive instrument that it has not had wide



they have clearly traced out the questions which must be answered regarding this perplexing subject.

In 1829, J. Chabrier¹⁴ suggested that, in some unknown manner, the bird recovers some of the energy which he expends in flight "by a recoil." Chabrier's figures would line up fairly well with Raspet's result, but a committee of academicians, led by Claude L. M. H. Navier,¹⁵ condemned Chabrier's result and estimated that power of approximately 10,000 B.T.U./hr./lb. is required in natural flight. James Bell Pettigrew, however, staunchly defends Chabrier's thesis in his great classic, *Animal Locomotion*.¹⁶ The ordinary theory of flight assumes that energy is all irrevocably lost rather than regenerated. It is not easy to define accurately and in simple language the regenerative energy to which Chabrier refers. Nevertheless, if the center of an open umbrella is uncovered and the umbrella abruptly accelerated toward the handle, the



use in exploring systematically the domain of pure science. Commonly, use of wind tunnels is restricted to tests aimed to settle questions arising from contemporary or projected military or commercial designs. Such elementary matters as the resistance of air flow on bulbous bodies, similar to that of the bird, have apparently received little attention from either group; this, despite the known beneficial action of the bulbous prow on ships.

Specifically, the gnawing question in this field concerns the exact nature of the air flow about a beating wing. Most of us are familiar with the cross-sectional view of a wing with parallel streams of air parting smoothly over its blunt forward edge. The streamlines come close together over the deeply curved upper surfaces. Streamlines from the upper and lower surfaces unite at the sharp rear, or trailing edge, and leave at a slight downward inclination. Such behavior is readily understood and serves well enough to explain the elementary reactions of the steady flight of the ordinary airplane. The streamline concepts break down seriously, however, when applied to a wing having the type of oscillatory motion of natural flight.

In order to grasp the complexity of the problem posed by the beating wing, it may be well to review first a more complete picture of the air flow about the ordinary fixed aircraft wing. The action causing this wing to support or "lift" the airplane has been explained in many ways. Three of these explanations have a bearing on our problem.

Bernoulli's theorem states that, in a flowing fluid, an increase in velocity will be accompanied by a decrease in pressure, other conditions being equal. The deep curvature of the upper surface causes an increase in velocity. Therefore, the upper surface experiences a drop in pressure; the reverse occurs on the lower surface. The upper surface is thereby pulled up and the lower surface pushed up.

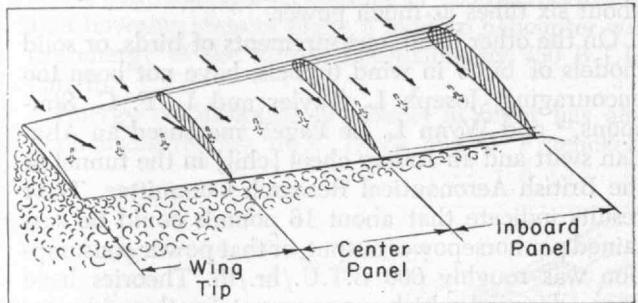
Newton's law tells us that momentum is conserved in a collision. In accordance with Newton's law, when the air and the wing collide, air is thrust downward and the wing is thrust upward. The downward angle at which the air leaves the wing is called the downwash angle.

Frederick W. Lanchester²¹ and Ludwig Prandtl developed the circulation theory.²² Very much simplified, their theory states that a ring of air spins around the wing just as though the wing were the axle of a wheel. The difference is that the wheel is rotating in reverse. If you can visualize an automobile in reverse gear being towed rapidly through deep snow, you will have pictured the essential behavior. The reversed spinning of the wheels tends to throw the snow ahead of them and thus contributes support or lift.

It must not be imagined that there is any conflict between these three views. They are simultaneous and demonstrable facts in a complex process. Nor does the complexity, which resists efforts to decipher beating-wing behavior, end here. The wing is more fully equipped with curls than is milady leaving the beauty parlor; and no serious discussion of the aeronautics of natural flight should omit at least a reference to these phenomena. It is regrettable that those

who fully understand the complexity of air flow on the fixed wing are sometimes prone to assume perfect simplicity when the wing beats.

We may roughly sketch out the behavior of the air about the fixed wing of the airplane as follows. We call the front edge of the wing the leading edge; the rear, the trailing edge. We will divide the wing roughly into three parts. The part nearest the body is called the inboard panel; the outermost part is called the wing tip, or tip panel; and the part between these, the center panel. The air over the center panel most nearly approximates the simple picture

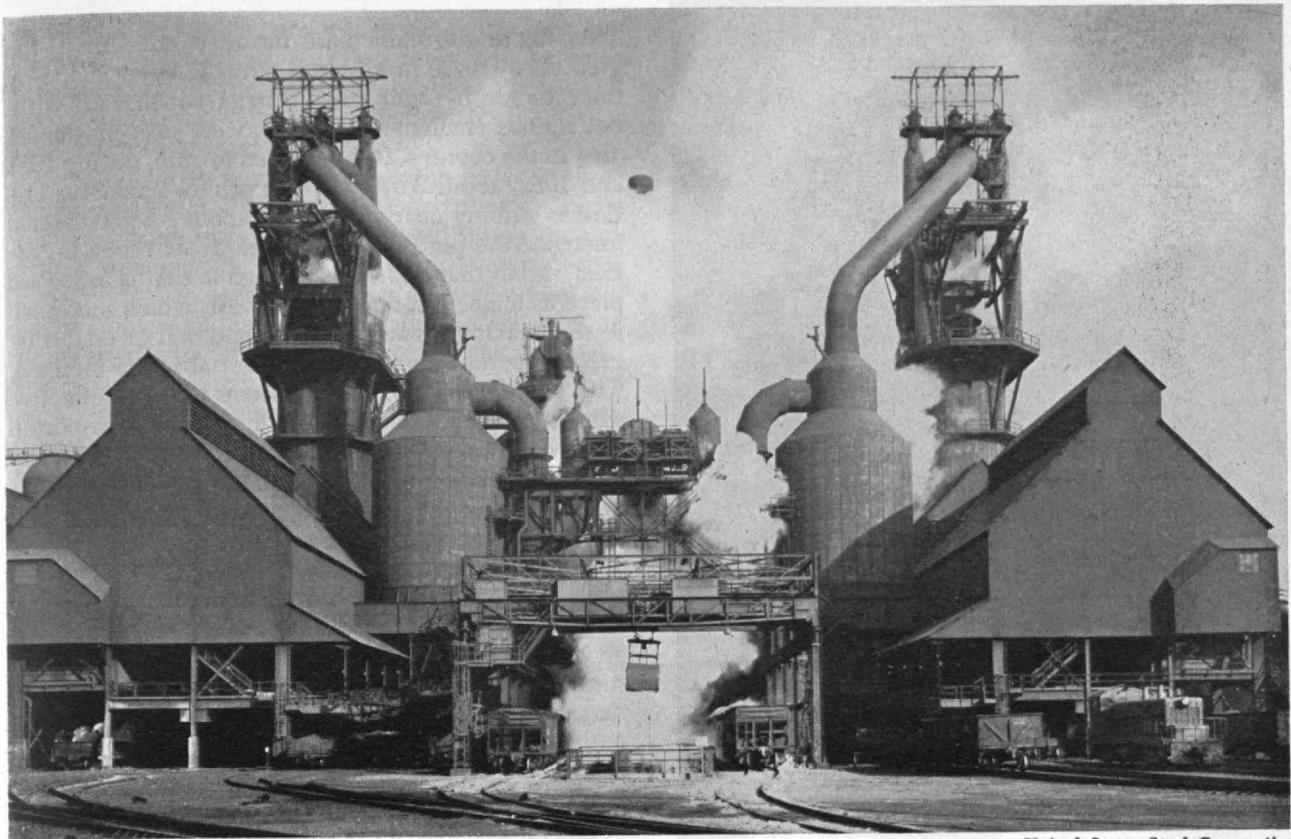


we have drawn so far. However, the air on its upper surface tends to go toward the body, while that below tends to go toward the tip. As this top inbound stream meets the bottom outbound stream at the trailing edge, a series of corkscrew whirls or vortices result. These are left behind in the wake of the wing like so many twists of wood from a carpenter's plane. They form a sort of flat sheet. Keeping this picture in mind, now imagine the wing surface waving vertically about its leading edge as though the wing were a sheet on a clothesline in a stiff wind. The complicated system of vortices which results is the wake produced at the center panel — when the wing is in "steady" air flow.

The strength of the inward and outward flows of air increases the nearer the vortices are to the end of the tip panel. The crescendo is reached at the tip itself. Here a veritable niagara of air pours out from under the wing (the high-pressure area) and curls in over the top surface (the low-pressure area). This results in a giant whirl called the tip vortex. It has been demonstrated, both experimentally and mathematically, that this giant eventually absorbs all the other vortices. Less of the inbound and outbound spanwise flows occur at the inboard panel. Here, however, the air stream of the body of the aircraft is encountered. By this time it should be evident that it is inconvenient to take into consideration effects of vorticity when bent on explaining the broad basic principles of bird flight. It should be equally evident, however, that any explanation which neglects these facts is of dubious scientific or engineering value. Those who follow the course of exclusion are bound to disagree with those who do not.

Two relatively recent volumes which have contributed to the field on the first basis are *Bird Flight*²³ by Gordon Aymar and *The Flight of Birds*²⁴ by John Storer. In each, the phenomena which are susceptible of simple interpretation are interestingly covered, and both books have splendid photographs of bird flight.

(Continued on page 46)



United States Steel Corporation

These towering twins at the South Works of Carnegie-Illinois Steel Corporation produce 3,000 tons of iron daily.

The Basic Metal

**Buttressing a Fundamental National Resource Is
the Current Program for Expanding Steel Capacity**

By PAUL COHEN

THE steel industry of this country, and, in fact, of the entire world, is currently in the midst of a productive, rather than a technological, crisis. The real problem of this basic industry is to provide the record-breaking amounts of steel required by its civilian and military consumers, and to obtain, likewise in record amounts, the necessary raw materials. In the first 12 months of the conflict in Korea, American steel plants poured out 101,934,000 tons of steel, representing more than 12,000,000 tons above production figures for the best year of World War II. This has been done amid the greatest expansion program the industry has ever undertaken, and at a time when many of the domestic sources of steelmaking materials are showing signs of exhaustion. In March of this year the S.S. *Bethore* docked at Sparrows Point, Md., with the first cargo of Venezuelan iron ore ever to reach this country. In June the Liberty ship, *Simeon G. Reed*, pulled into Baltimore to unload the first cargo of iron ore from Liberia.*

*The development of the mining and transport facilities to make such foreign ores available to American steel mills was described more fully in The Technology Review, 53:237 (March, 1951).

While these shipments may be described as an indication of this country's growing dependence on bulk imports of basic raw materials, to a degree, they are a secondary effect. After 10 years of the heaviest production it has seen, and after a decade of building that added almost 19,000,000 tons (between 1940 and 1950) to its rated capacity, the steel industry of this country is now engaged in a much greater expansion program. By the end of 1952, this industry's capacity — the official estimate of the tonnage which could be turned out if all equipment were worked to its designed maximum output with reasonable periods of down time for maintenance and repair — is expected to rise from slightly over 100,000,000 tons, the present figure, to about 118,000,000 tons (not counting some six million-odd tons of capacity in the western states).

This is not the future that was freely predicted when World War II ended. Said the *Minerals Yearbook* for 1944: "The annual production of steel ingots and castings for the five years following Japan's capitulation will probably average about 60,000,000 net tons." (It averaged nearer to 80,000,000 tons.) And the *Twentieth Century Fund*, in a survey of "America's Needs and Resources," declared that "Peacetime activity,



David W. Corson from A. Devaney, N.Y.

even under conditions of high-level income and employment, will undoubtedly leave the steel industry with surplus capacity and will considerably reduce the drain on iron ore reserves." For the five years ending with 1950, nominally years of peace, steel production averaged over 85 per cent of capacity. Since July, 1950, the rate has hovered about 100 per cent, and has been higher for weeks at a time. Total output for 1951 is expected to exceed 106,000,000 tons — the first 100,000,000-ton year in American history.

The erection of new capacity is permitting the steel industry to adjust its productive facilities to the new conditions of raw-material supply and consumer demand that the exhaustion of domestic mines, the passage of new laws, and changes in the American industrial scene have made advisable. Percentagewise, the greatest rise in capacity is being experienced in the East, and particularly in the Chesapeake-Delaware area, where some of the earliest furnaces in the country were built. The heavy concentration of population and industry in the East, more important than it was before the basing-point pricing system was outlawed by the courts, is a factor accounting for the growth of steel production facilities in the Middle Atlantic states, but accessibility to foreign ore is a more important one. Plans for about 8,000,000 tons of new capacity have been announced, although it appears that less than half this amount will materialize by the end of 1952. One of the plants, located on the Delaware River above Philadelphia, is well under way, and its projected capacity of 1,800,000 tons makes it not only one of the largest steel mills ever erected as a unit, but also comparable in output with the entire steel industry of Australia or India.

As far as the immediate future is concerned, the greatest increase in absolute terms is being made by the Pittsburgh-Youngstown district, which is still without serious challenge as the heaviest steel-producing area in the country. It is expected to gain, during 1951 and 1952, about 3,678,000 tons of new capacity. The East is gaining nearly as much (about 3,386,000 tons) for twice the percentage increase. It will soon be the East, rather than the Chicago region, that is in second place as a steel producer. The West, which increased its steelmaking capacity with exceptional speed during the war period, shows the smallest absolute increase, with 713,500 tons. There still seems to be no effective substitute for abundant raw materials transported mainly by water. With coal and iron deposits generally widely separated (the Kaiser plant at Fontana hauls most of its coal from Utah), the West is primarily dependent for its heavy transport on the railroads.

Similar difficulties are beginning to loom on the horizon for some of our older manufacturing regions. It is noteworthy that the Midwest, long apathetic about the St. Lawrence seaway, is shifting toward a strongly positive attitude. The realization is growing that, to maintain a flow of low-cost, high-grade iron ore into this great industrial region, access by ocean transport to the mines of the entire world must be assured.

The intense activity in producing steel, and in constructing new steelmaking capacity, that is currently characterizing the United States, is visible in many other countries, and for much the same reasons. Statistics of world production show that, in spite of the heavy damage done to the steel industries of three major producers — Germany, Russia, Japan — and the deliberate postwar throttling, until very recently, of German and Japanese output, world production today is not only substantially higher than it was before the war; it is higher even than at the peak of effort during World War II.

In 1939 the world produced 131,277,000 tons of steel. The United States was responsible for 35 per cent of it; Germany produced 19 per cent; Russia, 13 per cent; and Great Britain, 10 per cent. World output was 184,461,000 tons at the peak of war production, with the German and Japanese plants still virtually intact. In 1950, with German and Japanese outputs controlled by the occupying authorities, and with Russia completing a remarkable job of reconstruction, world production was 185,000,000 tons. As compared with the rankings of the various countries in 1939, some significant changes had occurred. The United States was first, with slightly over 50 per cent of the total (she had accounted for about 50 per cent of world output in 1929 also). Germany had dropped to fourth place and Russia, in second place with an output of 27,000,000 tons, was producing 60 per cent more than her 1939 production. In 1942, under the impact of Hitler's invasion of European Russia, Soviet output had declined to 9,000,000 tons. In 1950, Great Britain was in third place with about 9 per cent of the world's total steel production. In 1939, England had produced about 13,000,000 tons of steel. In 1950 she had produced about 16,300,000 tons. This year, output is expected to be less, although new capacity has been added, for lack of raw materials has so far

proved an intractable barrier to expanded production. Lately negotiations have been under way between Great Britain and the United States with the view of having this country supply England with 2,000,000 or 3,000,000 tons of steel next year.

It is difficult to avoid a comparison of these three countries — Great Britain, the United States, Russia — in relation to the present vigor and future outlook of their steel output, which in spite of every advance of metallurgy, remain the basis for all engineering and manufacturing industries. Great Britain, initiator of the industrial revolution and oldest of the industrial states, has not merely been stripped of top-grade iron ore; she no longer has adequate supplies of medium-grade ore. The domestic ores going into her furnaces are probably the poorest which are used on any large scale. Most of her pig iron comes from imported ore. Ships must bring in manganese, molybdenum, chrome, and many other vital steelmaking raw materials. If scrap iron is in short supply, or if the competition in world markets for material is fierce — and both conditions exist presently — there are no lush reserves to fall back on at home.

The United States is just beginning to see, on the horizon, the gaunt specters that have made themselves at home in England. Still far better off than Great Britain in relation to domestic reserves, still proud that, as far as a few alloying elements are concerned, she remains an exporter, the United States has prevented raw material shortages from pinching her booming steel production only by far-sighted planning, technically superb utilization of new, foreign mines, and tremendous bargaining power in world trade.

On the other hand, Russia's steel production, although only about one-quarter of America's, and representing, probably, a somewhat greater proportion of her over-all industrial effort than is poured into this country's steel output, is backed, according to *Iron Age*, by much larger domestic reserves, both relatively and absolutely, than is the case for this country. It is an inevitable consequence of her great land mass and her comparative industrial youth. Only in tungsten and molybdenum, apparently, is Russia seriously short of metals.

A large number of small nations have also had a hand in increasing world steel production, by striving with every resource to reduce or remove their dependence on imported steel. Chile, Brazil, and Australia are in this category. The new Huachopato steel plant near Concepción, Chile, with a capacity of 236,000 tons per year might be considered a minor element in a major industrial country, but it represents 10 times Chilean production before the plant opened. With materials, except for some of the coal, coming from local sources, it is expected not only to meet Chile's needs, but also to furnish an exportable surplus. The Volta Redonda steel mill in Brazil, currently producing about 300,000 tons per year, is in the process of an expansion program which may eventually double its capacity.

Most of the planned new capacity in the United States — actually 15.7 million tons as of January, 1951 — has been covered by the certificate of necessity which was granted by the government to companies whose plans for expansion are important to the gov-

ernment, and which might not otherwise be executed. Under this certificate the costs of a new plant can be amortized over a five-year period, instead of over the much longer period which is generally required for tax purposes.

A basic stimulus, however, is a world-wide hunger for steel. The steady increase in the world's population, at about 1 per cent a year, and an even faster increase (at least in the United States, Russia, and South America) in per capita demand, would be enough to keep steel industries expanding. Military requirements have also been a basic cause of heavy pressure on the steel industry. A much larger fraction of military, than of civilian, goods is "hard," and "hard" goods mean, for all practical purposes, products made of steel. What is more, a larger percentage of the raw material is apt to become scrap during the manufacturing process. A seven-ton tank turret, for example, may start as a 12-ton casting.

Heavy military demand for steel, we all hope, is a temporary phenomenon. A much sounder reason for the willingness of steel producers to expand output is that the civilian economy continues to show a persistent and growing appetite for steel — one that, surveys indicate may be of long duration. Nor is this trend restricted to the United States. The great technical and material resources of this country make it possible for demand to be met quickly by increased output, but an enormous latent market for steel exists in all countries. Every time a new cement mill is shipped to Iran, or a new railroad is erected in Venezuela, the world's need for steel is increased. Steel usage is like drug addiction; every new installation makes new uses for steel feasible, instead of bringing a step nearer the saturation of demand. A very elementary illustration is the automobile industry where the creation of a multimillion fleet of cars was made possible by, and simultaneously generated a need for, steel bridges to span rivers, roads of concrete reinforced with steel to carry the heavier traffic, pipe lines and refineries of steel to supply the fuel, acres of machinery to build and repair the cars, and so on ad infinitum.

As far as estimates can be made, there are currently in use in this country about one and a half billion tons of steel, or about 20,000 pounds for every man, woman, and child. One company alone, in the past 50 years, poured 940,000,000 tons of steel from its furnaces. With much of this accumulation the public never comes into contact. It is hidden behind masses of concrete, in the skeletons of buildings, in underground tunnels and conduits, and, of course, in the tremendous production plant of the country's industry. Because of a variety of protective or decorative covers, the public is likewise not consciously aware of many other articles made of steel which it handles daily, such as silverplate over forks and spoons; chromium over automobile bumpers or cocktail shakers; textiles over belt buckles; glass, porcelain, and paints over a wide range of household and industrial apparatus. A refrigerator is composed mostly of steel; on the average, there are about 170 pounds of it in each American white-robed kitchen goddess. A grand piano contains 220 pounds of iron and steel. There is more than a ton and a half of steel in the typical American automobile,



H. Armstrong Roberts

although a more representative figure, perhaps, is the 3,992 pounds of steel that are delivered to the automobile industry per vehicle produced. The average one-family house contains, all told, about four tons of the metal in various forms. This is very decidedly not the case in countries with lower standards of living. Even in Russia it is unlikely that houses are built without nails, but most assuredly when a Soviet couple step over the threshold of their new house, if they have been lucky enough to acquire one, they do not find a steel refrigerator, a steel washing machine, a stainless steel sink, a sheet steel gas range, and cabinets, steel springs under the nonexistent upholstery on the chairs, or a steel I-beam spanning the cellar. The relatively small amount of steel for civilian uses explains why Russian steel output goes much further militarily and in the manufacture of military equipment and durable goods than sheer tonnage, by American standards, would indicate.

Representing spectacular examples of steel used on a large scale are such structures as the Empire State Building, which contains 50,000 tons of steel; the recently completed 1,068-mile-long pipe line, extending from the Persian Gulf to the Mediterranean, which contains 325,000 tons of steel; and ships of the United States Navy, which it is safe to say, are well over 90 per cent steel. In light of the steel requirements per automobile, equally impressive is the fact that between 1946 and 1950 this country allocated about 20 per cent of the country's steel output in the manufacture of 25,000,000 new automobiles and trucks.

It is impossible to determine accurately the amount of steel equipment that is discarded or destroyed every year. Rough estimates of spoilage can be made from the amount of steel returned to the mills as scrap, and from the amount going into applications having a short life. For example, about 9 per cent of steel production goes into containers, primarily tin cans, which are not salvageable for all practical purposes.

As for obsolescent and broken equipment that is returned to the mills (the statistics are so prepared that such purchased scrap also includes some scrap created in the normal processes of manufacturing), it can be said that, roughly, it varies from a half to a third of the annual steel output. The supply of scrap is somewhat inelastic, and sharp increases in demand are apt to be met by increased use of pig iron. A study of the scrap cycle in Great Britain indicates that the scrap currently being returned to the steel mills in that country amounts to about 46 per cent of the steel being incorporated in finished form into the domestic economy. Many of the smaller European pro-

ducers, prevented by various special circumstances (such as the lack of coal in Sweden and Norway) from using iron ore freely, use up to 90 per cent scrap in their furnaces.

Perhaps the most significant index of the increased dependence of the American economy on steel is to be found in the production per capita, since such figures are not confused, as are absolute production statistics, by the country's steady rise in population. From 1900, per capita production (virtually equivalent to consumption, since less than 10 per cent of this country's steel is normally exported) has grown from 300 pounds to 1,200 pounds as indicated in the following summation:

*Per Capita Steel Production
in United States*

Year	Lbs.
1900	300
1910	633
1915	716
1929	1,038
1950	1,200

In World War I, this country turned out about 700 pounds of steel per capita per year; in World War II, about 1,300 pounds per capita.

These figures continue to represent about 95 per cent of the metal, structural or otherwise, used by the American people. In spite of the remarkable success of the metallurgists in recovering an impressive number of industrially useful metals from various ores that defied our ancestors, the basic fact remains that there is no substitute for steel. One can list the properties of engineering materials, from aluminum to zirconium without finding one material which can replace it as the connective tissue of our form of civilization. Although steel in all its forms has a rather remarkable range of behavior, its physical properties

(Continued on page 42)

Graduate Students in Physics

The Institute Plays a Disproportionately Large Part in Supplying the Country with Outstanding Physicists

By PHILIP M. MORSE

TAIRED scientists and engineers are the principal product of M.I.T. Particularly in view of the increasing technological phase of our present society, a not unimportant portion of this contribution is the Institute's output of graduate-trained physicists. During the 10 years before World War II, M.I.T. trained and granted degrees to more than 5 per cent of all who had acquired doctor's degrees in physics educated in this country during that period. Because of circumstances too numerous and well known to enumerate here, holders of master's and doctor's degrees in physics played an important role in World War II, and persons with such training have been since in very short supply. It is thus of some interest to analyze the Institute's record of admissions, degrees granted, and quality of output.

The 1949 edition of *American Men of Science*¹ is a very useful indicator of the quality of our output. It does not give a quantitative index of an individual's ability in his chosen field, but at least a listing in this volume indicates that the person is active in science and is rated by his colleagues as a contributing member of his profession. The graduate students who entered M.I.T. before the war have been out long enough now so that absence of listing in *American Men of Science* may be taken as an indication that they are no longer contributing members in the professional field for which they were trained, although they may be performing excellently in some other work. Using *American Men of Science* as a measure of effectiveness, this survey analyzes the record of those who have received M.I.T. graduate training in physics.

Data for this study were all obtained from records of the registration officer for the Department of Physics and are summarized in Table I. The records are fairly complete for those students who were in residence for at least one term, and the results quoted for this part of the analysis should not be in error by more than a few per cent. Data on students who applied for admission but did not register are less complete. Nevertheless, allowing for errors in judgment in evaluating the data, the over-all results are probably within 10 per cent of the correct values, and are certainly good enough to validate the conclusions drawn.

On the 148 students who were registered for one or more terms, as given in Table I, M.I.T. expended 761 student terms, 183 scholarship terms, 80 research assistantship-terms, and 248 teaching fellowship-terms to produce 26 physicists with S.M. degrees, 77 with

¹ Edited by Jaques Cattell (Lancaster, Pa.: The Science Press, 1949). \$16.50.

TABLE I—Record of Graduate Students in Physics, M.I.T., 1934–1942

	No. Incl. in No. AMS*
Applications received	679 (272)
Admitted to Graduate School	377 (198)
Registered one or more terms	148 (74)
Average attendance, 5.04 terms	
Average cumulative rating, 4.20	
Students who left, with no degree	48 (9)
Average attendance, 3.12 terms	
Average cumulative rating, 3.53	
Scholarships, 1st term, to 10	
Res. Assts., 1st term, to 3	
Teach. Fel'wshps., 1st term, to 6	
Students who obtained S.M. degrees	26 (11)
Average attendance, 4.00 terms	
Average cumulative rating, 4.30	
Scholarships, 1st term, to 7	
Res. Assts., 1st term, to 3	
Teach. Fel'wshps., 1st term, to 2	
Three continued and acquired doctor's degrees	
Students who obtained Dr.'s degrees	77 (57)
Average attendance, 6.59 terms	
Average cumulative rating, 4.57	
Scholarships, 1st term, to 32	
Res. Assts., 1st term, to 3	
Teach. Fel'wshps., 1st term, to 38	

*Figures in parentheses, in boldface type, represent inclusion in *American Men of Science*, 1949 edition.

doctor's degrees, and 77 with listings in *American Men of Science*.

During the eight years between January, 1934, and January, 1942, 679 applications² for admission to the Graduate School in the Department of Physics were received. Of these, 272, or 40 per cent, were from persons who are now listed in *American Men of Science*. It is clear, therefore, that applicants for graduate study in physics at the Institute included a fair percentage of potential scientists. Not all applicants were ad-

² Applications are counted separately for each year; an application for a given year, from a person who applied the year before, but did not come, is counted as another application.

TABLE II—Comparison between Recipients and Nonrecipients of Awards for Graduate Study in Physics at M.I.T., 1934–1942

1st Term Awards	No.	Fraction in AMS*	Fraction Awarded Dr.'s Deg.	Fraction Awarded S.M.	Fraction Leaving No. Deg.	Cumulative Rating
Teaching Fellowships	44	0.66	0.82	0.05	0.13	4.55
Research Assistantships	9	0.55	0.50	0.13	0.37	4.18
Scholarships	43	0.63	0.63	0.16	0.21	4.25
No Award	52	0.34	0.19	0.25	0.56	3.46
Total	148	0.50	0.51	0.17	0.32	4.20

*American Men of Science, 1949 edition

mitted, of course; some withdrew or did not complete their applications, some did not have a good undergraduate record, and others did not receive sufficiently high recommendations from their professors to appear to justify graduate study. Only 377 were admitted, of which 198, or 53 per cent, are listed in *American Men of Science*.

These over-all figures clearly indicate that those admitted to graduate study in physics achieved a higher degree of professional success than those who simply applied for admission, that is, 53 per cent as compared to 40 per cent. Nevertheless, we see that those admitted to the Graduate School did not include all the potential scientists who applied; 72 of the 303 not admitted are now listed in *American Men of Science*.

Failure to prophesy more precisely the future professional success of applicants which these figures indicate is not entirely chargeable to error in judgment of the Department committee, however, for many of those not admitted withdrew or did not complete their application. In addition, choice of likely candidates is dependent, to a large extent, on the letters of recommendation from former teachers who may be expected to know the candidate reasonably well. In the light of later achievements, detailed examination indicates that quite a few rank-order judgments included in letters of recommendation were faulty.

Not all candidates who were admitted actually attended M.I.T., of course. Many reasons account for the shrinkage. In some cases personal circumstances or professional interests changed; in others, the applicant obtained admission on a satisfactory basis at another educational institution. A large number of applicants stated that they would require financial aid in order to undertake graduate study. Often the necessary assistance was in excess of that we were able to provide, no matter how deserving the applicant. The Institute awarded some scholarships and fellowships, as did other schools, of course. Those who received no award went to the school of their choice, if they could afford to; otherwise, they gave up advanced study for remunerative employment.

The available awards were, of course, made to those applicants who were considered most likely to benefit from graduate study and most likely to make a success in their professional field. It is, therefore, important to see how well the teaching fellow-

ship- and research assistantship-awards were made; this will be analyzed later in the article.

In the eight years between 1934 and 1942, there were 148 new graduate students actually registered in the Department of Physics, of which 74 are listed in *American Men of Science*. Of the enrolled graduate students, 48 never received advanced degrees; they failed in their class work, had financial difficulties, or completed their studies elsewhere. A good many of the 48 were not good graduate-student material, for their average cumulative rating was 3.53 (out of a possible 5.00), in contrast with 4.20 for the whole 148. But not all who failed to receive M.I.T. degrees were bad material; some got their degrees elsewhere, and nine are contributing scientists now, as judged by their inclusion in *American Men of Science*. Among the group completing requirements for degrees were 26 men who received master's degrees; their average cumulative scholastic rating was 4.30. Eleven of them are listed in *American Men of Science*. Three of these men continued their studies and acquired a doctor's degree at the Institute.

Of the 148 graduate students in Physics during these eight years, 77 obtained doctor's degrees, and 57 (the fairly high figure of 74 per cent) of them are listed in *American Men of Science*. Practically all of these men who had obtained doctor's degrees made significant contributions to the war effort; a number held responsible positions in the M.I.T. Radiation Laboratory, in research centers at Los Alamos, Oak Ridge, and other large war laboratories. Many of them are now world-famous scientists; others are in important executive positions in scientific organizations as head of departments or laboratory directors.

According to *Physics Today*,³ less than 1,000 physicists were awarded doctor's degrees in the United States in the period of time studied, so that the 77 trained at M.I.T. was of the order of 10 per cent of the whole. (In 1949 this percentage was over 20; M.I.T.'s fractional contribution of graduate physicists has markedly increased since the war.) Of all the physicists obtaining doctor's degrees in the United States during the eight years under study, and who have also attained reputation sufficient for them to be listed in *American Men of Science*, it appears likely that the 57 from M.I.T. constitute more than 10 per

³ 3:18 (December, 1950).

cent of the total. This is by no means an unsatisfactory record and, as evidenced from the foregoing, it is even better since the war.

As indicated above, it is important to see whether the students awarded teaching fellowships or scholarships, on the basis of their undergraduate records, were of better quality than those who came without such financial encouragement. There were some cases in which the applicants did not apply for any aid or who came on funds supplied elsewhere. These cases dilute the figures but cannot negate the general conclusions given here.

The group of men (44 of the 148) who were awarded a teaching fellowship before entering Technology were supposedly the "pick of the lot." Twenty-nine of the 44, or 66 per cent, are listed in *American Men of Science*. This score is better than the average of all registrants (50 per cent) but not as good as the 74 per cent score for those who were finally awarded a doctor's degree as shown in Table II.

In regard to achievements both while at the Institute and afterward, the group selected by the Department to receive teaching fellowships the first term are definitely better than the average, although not as much better as one would wish; here then is room for improvement in initial selection. The group awarded tuition scholarships the first term are also better than average, although not as high as those awarded teaching fellowships. The scholastic performance of these two groups corresponds to the order of rating of the two awards. In general, men who have received research assistantships were no better than average. Before the war, however, research assistantships tended to be awarded to specialists, for their usefulness to the Institute in research projects, rather than for their capabilities as students.

Perhaps the most interesting figure is that for the men who were not given financial aid their first graduate term. They were not only decidedly poorer than the ones given awards but fewer of them became recognized physicists than the average applicant for

admission. (Only 34 per cent are in *American Men of Science*; 40 per cent of those who applied are listed.) Apparently more of the better men not given awards at the Institute went elsewhere, presumably to some other institution which did give them an award. In order to have attracted more of the better men, the Institute would have had to award more fellowships. Those coming without awards were, on the average, those who had not secured awards elsewhere either.

It is also of interest to rearrange the data to indicate which schools supplied M.I.T. with its best graduate material in physics. Applications from graduates of 169 different colleges and universities were received during the eight-year period, and graduates from 75 attended at least one term here. The data according to source are not as complete and as accurate as the scholastic records of students considered above, and certainly the small number of applicants from some educational institutions makes statistical conclusions dangerous. Nevertheless a number of interesting results are apparent. In the first place, the numbers of applicants, as well as those who eventually were listed in *American Men of Science*, bear practically no relation to the size of the undergraduate school attended. Some smaller colleges have sent a disproportionate number of good graduate students to the Institute. It appears that the larger schools either retain their best students for graduate work, or possibly did not do as well as the smaller schools in providing undergraduate training in physics. Analysis of registration of those accomplishing their undergraduate work at the Institute tends to favor the former explanation.

During the eight years covered, 46 Institute graduates applied for admission to the Graduate School in Physics, of which only one was refused admission for reason of low grades. Of these applicants, 26, or 57 per cent, are listed in *American Men of Science*. This percentage is somewhat higher than the average (50 per cent) of all graduate students in physics. Registered in the Graduate School were 32 of the 46 applicants,

(Continued on page 40)

TABLE III—*Ratings of Institutions* which Supplied Graduate Students in Physics to M.I.T.*

School	No. Applying	No. Admitted	No. Registered	No. S.M.	No. Dr.'s	Average Cu- mulative Rating
Buffalo, University of	3 (3)†	3 (3)	2 (2)	—	1 (1)	3.3
California Inst. of Technology	7 (2)	6 (2)	3 (2)	—	2 (2)	4.3
Case Institute of Technology	7 (6)	7 (6)	5 (4)	—	5 (4)	4.5
Chicago, University of	6 (2)	6 (2)	3 (2)	1 (1)	—	3.8
Columbia University	5 (3)	4 (2)	4 (2)	1 (0)	2 (2)	4.3
Kansas, University of	4 (3)	3 (2)	2 (2)	1 (1)	1 (1)	4.1
Mass. Institute of Technology	46 (26)	45 (26)	32 (21)	10 (5)	17 (14)	4.3
New York, College of the City of	13 (6)	8 (5)	3 (2)	—	1 (1)	3.9
Oberlin College	14 (12)	13 (11)	6 (5)	—	5 (5)	4.8
Temple University	4 (3)	3 (2)	2 (2)	1 (1)	1 (1)	4.1

* Only those institutions are included for which the figure in parentheses in the third column is two or greater.

† Figures in parentheses, in boldface type, represent inclusion in *American Men of Science*, 1949 edition.

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Britons Give Special Lectures

Two distinguished British chemists, one a Nobel prize winner, delivered two special lectures at the Institute in mid-September. The visiting lecturers were Sir Robert Robinson, who spoke on "Syntheses in the Steroid Group" on September 19, and Alexander R. Todd, whose topic was "Some Recent Progress in Nucleotide Research" on September 21. Both lectures were given under the auspices of the Department of Chemistry. The speakers were introduced by Professor Arthur C. Cope, Head of the Chemistry Department.

Sir Robert Robinson, who since 1930 has been Waynflete Professor of Chemistry at Oxford University, was knighted in 1939 in recognition of his substantial contributions to chemistry. The Nobel prize in chemistry was awarded to Sir Robert in 1947 for his investigations of biologically important plant products, especially alkaloids. A Fellow of the Royal Society of London, he also received in 1930 the Society's Davy Medal and its highest award, the Copley Medal, in 1942.

A past president of both the Chemical Society of London and of the Royal Society, Sir Robert has had a distinguished career as a professor of chemistry. In addition to his present post at Oxford, his teaching appointments have included the Universities of Sidney, Liverpool, St. Andrews, Manchester, and University College, London.

Alexander R. Todd, a former collaborator of Sir Robert's at Oxford, has since 1944 been professor of organic chemistry at the University of Cambridge. A graduate of the University of Glasgow in 1928, Dr. Todd studied extensively in Germany before World War II and has also been associated with the University of Edinburgh, the Lister Institute of Preventive Medicine, and the University of Manchester.

Elected a Fellow of the Royal Society of London in 1942, Dr. Todd received in 1949 the Society's Davy Medal, which is awarded annually for the most important European or Anglo-American discovery in chemistry. Professor Todd has specialized in structural and synthetic studies in organic and biochemistry with special reference to vitamins B₁ and E.

Higgins Professorship to Slater

JOHN C. SLATER, for 21 years Head of the Department of Physics at M.I.T., has been appointed Harry B. Higgins Professor of the Solid State, according to an announcement by Professor George R. Harrison, Dean of Science, in September. This professorship, recently established under a grant from the Pittsburgh Plate Glass Company, is designed to further theoretical and experimental work on the constitution of solids.

Scientists have always found it much easier to explain the behavior of matter in the gaseous and liquid states than in its solid condition, but in recent years important advances have been made in the elucidation of the structures of metals, other solids, and glass. Professor Slater has made outstanding contributions to these advances, and it is expected that his new appointment will contribute greatly to progress in this important field.

Only recently Professor Slater was appointed to the newly created post of Institute Professor, with freedom to conduct investigations using M.I.T. facilities without regard to departmental boundaries. Dr. Slater's appointment as Higgins Professor will enable him to engage in studies in which he has long been interested, and to which he has made substantial contributions.

Course X Administration

PROFESSOR EDWIN R. GILLILAND, '33, of the Department of Chemical Engineering and Associate Director of the Laboratory for Nuclear Science and Engineering at the Institute, has been appointed acting head of the Department, according to Thomas K. Sherwood, '24, Dean of Engineering.

Professor Gilliland will serve during the leave of absence of Professor Walter G. Whitman, '17, Head of the Chemical Engineering Department since 1934, who has been appointed chairman of the Research and Development Board of the Department of Defense in Washington. Professor Whitman succeeds William Webster, '23, and his appointment became effective July 15.

Dr. Gilliland, a member of the Institute's staff since 1934, served as deputy dean of engineering in 1945 and 1946. During World War II, Dr. Gilliland was a prominent figure in the nation's synthetic rubber program. From 1942 to 1943 he was assistant deputy rubber director in charge of research for the Rubber Administration, and for the following two years he was assistant rubber director. In 1945 he became deputy chairman of the Guided Missiles Committee of the Joint Chiefs of Staff and a member of the Technical Industrial Disarmament Committee. He had previously served as deputy chief of Division 11 of the National Defense Research Committee and chief of the Jet Propulsion Panel, Office of Field Service, for the Navy Department.

Dr. Gilliland has received wide recognition for his professional achievements. He was the first recipient of the \$1,000 Leo Hendrik Baekeland Award of the North Jersey section of the American Chemical Society, and last year he received the Professional Progress Award of the American Institute of Chemical Engineers. In 1948, Northeastern University awarded him the honorary degree of doctor of engineering.

Franklin Institute Medals to Chipman and Collins

THE Franklin Institute has awarded the Francis J. Clamer Medal to Professor John Chipman, Head of the Department of Metallurgy, and the John Price Wetherill Medal to Professor Samuel C. Collins of the Department of Mechanical Engineering at M.I.T. Professors Chipman and Collins received the medals formally on October 17 at special Medal Day ceremonies in Franklin Institute's Franklin Hall.

The Clamer Medal, established in 1943, is given at least once in five years for meritorious achievement in the field of metallurgy. This year the award was given, by unanimous vote, to Dr. Chipman "in recognition of his contributions, as an individual and as a teacher, to the application of the theories of physical chemistry to steelmaking practice." His leadership in the field is recognized throughout the metallurgical world. Professor Chipman has been ranked as "the father of modern metallurgical thermodynamics" and as "certainly within the top group of three metallurgists in this country," according to Henry B. Allen, Executive Vice-president and Secretary of the Franklin Institute.

Turning his attention to steelmaking processes in 1929, Professor Chipman undertook to place the physical chemistry of steelmaking on a quantitative and sound theoretical base. More than any other single individual, he has been responsible for placing the mechanism of deoxidation in steelmaking on a quantitative basis, making it possible to determine the amount of deoxidizers, and the time and order of their addition to achieve the desired degree of deoxidation and the economical production of steel of a desired quality.

Professor Chipman came to M.I.T. in 1937 as professor of metallurgy and has been head of the Department since 1946. In 1942 he was director of the metallurgical project at M.I.T. which was part of the Manhattan Project, and in 1943-1944 he was engaged

in work at the University of Chicago, as chief of the metallurgical section, where fundamental work related to the production of plutonium was carried out during World War II.

The John Price Wetherill Medal was awarded to Professor Collins "in consideration of the invention and subsequent development of the first liquefier of helium to operate without the aid of external refrigerants, an admirably designed, reliable machine which is produced in quantity and has materially increased the number of laboratories and persons engaged in work at ultra low temperatures." The Collins helium cryostat is considered the most important contribution to cryogenic technique since the original liquefaction of helium in 1908.

Professor Collins studied at the University of Tennessee and the University of North Carolina. While still working for his doctor's degree, he taught chemistry at Carson-Newman College and was an instructor in physics at the University of North Carolina. In 1930 he joined the staff of the Institute. In addition to his invention of the helium cryostat, of which 37 are now in use, Dr. Collins has done research on the thermodynamic properties of gases, production and maintenance of very low temperatures, and improvement of oxygen processes of low-pressure type.

In the same ceremonies at which Professors Chipman and Collins were honored, Howard O. McMahon, '41, a research associate in the M.I.T. Department of Physics and affiliated with Arthur D. Little, Inc., received the Edward Longstreth Medal for his major contributions to the success of the Collins cryostat. He prepared the original invention for production in quantity and was responsible for the excellent mechanical design of the machine. Dr. McMahon was a former student of Professor Collins', so that the award to Professor Collins may be considered a tribute to his teaching ability as well as to his research talents.



M.I.T. Photos

Three of the Institute's Faculty who have recently received recognition. (Left): Professor Edwin R. Gilliland, '33, becomes acting head of the Department of Chemical Engineering, following the appointment of Professor Walter G. Whitman, '17, to a Washington defense post. (Center): Professor Samuel C. Collins received the John Price Wetherill Medal for his invention of the helium cryostat. (Right): Professor John Chipman was honored with the Clamer Medal for his work in the field of physical chemistry of steel manufacture.

Dormitory Facilities Expanded

STUDENTS returning to the Institute for registration on September 17 found increased dormitory facilities. With the acquisition of Burton House, dedicated last June to the memory of Alfred E. Burton, the Institute's first Dean, M.I.T. now has housing facilities for more than 2,100 students.

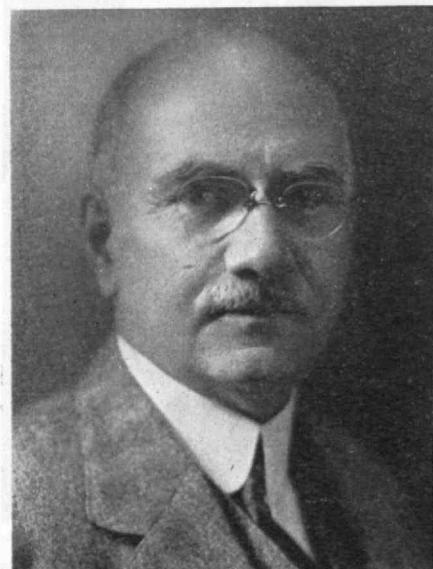
Figures from the Registrar's Office, as of September 19, indicate a total of 4,777 students for the 1951-1952 school year — 3,133 of whom will pursue undergraduate work and 1,644 on the graduate level. The senior class will contain 923 members (this figure includes fifth-year students in the Courses in Architecture and Marine Engineering); junior class, 742; sophomore class, 724; freshman class, 744.

An innovation in campus living, inaugurated this fall, is the appointment of three Faculty residents who will live in the undergraduate houses. The Faculty residents and their families, who will occupy new suites in three of the undergraduate houses are: Professor John T. Rule, '21, Head of the Section of Graphics, and in charge of the Course in General Science and General Engineering, in Burton House; Frederick G. Fassett, Jr., Director of the Publications Office, in Baker House; and S. Curtis Powell, '37, Assistant Professor of Marine Engineering, in Munroe House.

Students this year will also see the completion, as part of the Institute's continuing Development Program, of two important research laboratories: the John Thompson Dorrance Laboratory, and the Sloan Metal Processing Laboratory.

The Dorrance Laboratory will house the Departments of Biology and Food Technology, and the specialized equipment necessary for research in these fields. The new laboratory building will provide facilities to meet an increasing demand for graduates technically trained in the cause of better health and food.

The Sloan Metal Processing Laboratory will enrich and extend the Institute's engineering program in a field of increasing technological importance.



M.I.T. Photo

Professor Dugald C. Jackson
*Head of the Department of
Electrical Engineering, 1907-1935*

M.I.T. Supports New FM Station

A NEW high-power noncommercial FM (frequency-modulated) station for educational broadcasting, bringing to the people of New England full-length live performances of the Boston Symphony Orchestra, as well as the cultural resources of Greater Boston colleges and universities, held its initial broadcast on October 6. The new station began its operation with the first Saturday evening performance of the Boston Symphony Orchestra's 71st season.

Ralph Lowell, trustee of the Lowell Institute School and member of the M.I.T. Corporation, announced that the Boston Symphony Orchestra has joined with the Lowell Institute Cooperative Broadcasting Council, organized in 1946 to promote adult education by radio and television in the New England area, to inaugurate the new station, which will have the call letters WGBH. The Lowell Institute Cooperative Broadcasting Council is composed of six colleges and universities of Greater Boston — Boston College, Boston University, Harvard University, M.I.T., Northeastern University, and Tufts College.

"This new radio station will be the only one of its kind in the United States in which a major symphony orchestra is collaborating with a group of colleges, universities, and other cultural institutions to offer a program of general education for all groups in the community," Mr. Lowell stated.

Consulting and supervising engineers in the construction and installation of the station are Professor William H. Radford, '32, of the M.I.T. Department of Electrical Engineering, and Emory L. Chaffee, '07, Professor of Applied Physics and Director of the Laboratories of Engineering Sciences and Applied Physics at Harvard. Station WGBH, with studios in Symphony Hall and transmitter on Great Blue Hill in Milton, will operate at 89.7 megacycles in the frequency-modulated band on channel 209, with effective radiated power of 20,000 watts.

(Continued on page 36)

Dugald C. Jackson: 1865-1951

MEMORIAL services were held on October 21, at the First Church in Cambridge (Congregational) for Professor Emeritus Dugald C. Jackson, who died at his home in Cambridge on July 1, after having served with great distinction as head of the Institute's Department of Electrical Engineering for more than a quarter of a century. An impressive portion of the services was the lay appreciation of Professor Jackson delivered by Vannevar Bush, '16, formerly a vice-president of the Institute and member of the Electrical Engineering Department.

Professor Jackson graduated from Pennsylvania State College in 1885. After two years of graduate study at Cornell University, he joined the staff at the University of Wisconsin in 1891 before coming to M.I.T. in 1907 as professor and head of the Electrical Engineering Department—the position which he held until his retirement in 1935.

In 1919, Professor Jackson organized the firm of Jackson and Moreland, of which he was the senior partner until his retirement from active consulting work in 1930. During World War I, he served as lieutenant colonel of Engineers in France and as chief engineer of the Technical Board, and was made a chevalier of the Legion of Honor. In 1929 President Hoover appointed him as representative of the United States at the World Engineering Congress in Tokyo. He was also a member of the National Research Council from 1928 to 1936.

BUSINESS IN MOTION

To our Colleagues in American Business ...

For several years this space has been used to tell how Revere has collaborated with its customers, to mutual benefit. Now we want to talk about the way our customers can help us, again to mutual benefit. The subject is scrap. This is so important that a goodly number of Revere men, salesmen and others, have been assigned to urge customers to ship back to our mills the scrap generated from our mill products, such as sheet and strip, rod and bar, tube, plate, and so on. Probably few people realize it, but the copper and brass industry obtains about 30% of its metal requirements from scrap. In these days when copper is in such short supply, the importance of adequate supplies of scrap is greater than ever. We need scrap, our industry needs scrap, our country needs it promptly.

Scrap comes from many different sources, and in varying amounts. A company making screw-machine products may find that the finished parts weigh only about 50% as much as the original bar or rod. The turnings are valuable, and should be sold back to the mill. Firms who stamp parts out of strip have been materially helped in many cases by the Revere Technical Advisory Service, which delights in working out specifications as to dimensions in order to minimize the weight of trimmings; nevertheless, such manufacturing operations inevitably produce scrap. Revere needs it. Only by obtaining scrap can Revere, along with the other companies in the copper and brass business, do the utmost possible



in filling orders. You see, scrap helps us help you.

In seeking copper and brass scrap we cannot appeal to the general public, nor, for that matter, to the small businesses, important though they are, which have only a few hundred pounds or so to dispose of at a time. Scrap in small amounts is taken by dealers, who perform a valuable service in collecting and sorting it, and making it available in large quantities to the mills. Revere, which ships large tonnages of mill products to important manufacturers, seeks from them in return the scrap that is generated, which runs into big figures of segregated or classified scrap, ready to be melted down and processed so that more tons of finished mill products can be provided.

So Revere, in your own interest, urges you to give some extra thought to the matter of scrap. The more you can help us in this respect, the more we can help you. When a Revere salesman calls and inquires about scrap, may we ask you to

give him your cooperation? In fact, we would like to say that it would be in your own interest to give special thought at this time to all kinds of scrap. No matter what materials you buy, the chances are that some portions of them, whether trimmings or rejects, do not find their way into your finished products. Let's all see that everything that can be re-used or re-processed is turned back quickly into the appropriate channels and thus returned to our national sources of supply, for the protection of us all.

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THE INSTITUTE GAZETTE

(Continued from page 34)

Professor Struik

To Technology Alumni, as well as to the members of the Institute's loyal and patriotic Faculty and staff, the extracurricular activities with which Professor Dirk J. Struik, of the Department of Mathematics at M.I.T., has been charged are a matter of deep concern. In April, 1949, Professor Struik received wide publicity when a witness at the trial of 11 Communists in New York testified that he had lectured before Communist groups. Last July, Professor Struik was summoned to appear before a subcommittee of the Committee on Un-American Activities of the House of Representatives of Congress. Professor Struik, by advice of counsel, refused to answer most of the committee's questions on the grounds that his answers might tend to incriminate him. On September 12, Professor Struik was indicted by a Middlesex County Grand Jury on charges that he had advocated the overthrow of the governments of the United States and the Commonwealth of Massachusetts. As a result of this indictment, Professor Struik was immediately relieved of all Institute duties by the Executive Committee of the M.I.T. Corporation, pending the outcome of the indictment.

In a letter dated September 27, and sent to all Technology Alumni, President Killian reported in full on the facts of this case. Nevertheless, the issues raised are of such importance as to warrant a review, in these pages, of the Institute's policy on academic freedom.

The Institute's unequivocal opposition to Communism was made public on May 3, 1949, in a statement of policy, approved by the Executive Committee of

the Corporation, and recorded in "President Killian's Statement on Academic Freedom and Communism," which appeared on page 432 of the May, 1949, issue of The Review. This policy, which is intended to deal justly with all concerned and looks to the courts for the proper and orderly handling of judicial matters, is still in effect, and has guided the Institute's action in subsequent developments.

The text of the public announcement of Professor Struik's suspension, dated September 12, 1951, is as follows:

Professor Dirk J. Struik, Professor of Mathematics at the Massachusetts Institute of Technology, has been relieved of all duties at the Institute pending disposition of his case in the courts.

In a statement announcing the suspension by the Executive Committee of the Institute's Corporation, James R. Killian, Jr., President of the Institute, said:

"On May 3rd, 1949, the Institute issued a statement expressing its unequivocal opposition to Communism as well as the Institute's firm adherence to the concepts of academic freedom.

"In that statement the Institute expressed its belief that Professor Struik, who denied that he had committed any crime, should be considered innocent of any criminal action unless he were proved guilty. Furthermore, the Institute expressed its belief that if criminal charges were to be brought against Professor Struik they should be brought by the government and handled in the orderly procedure of the courts. An educational institution has no competence to carry on a trial to determine whether a law has been broken.

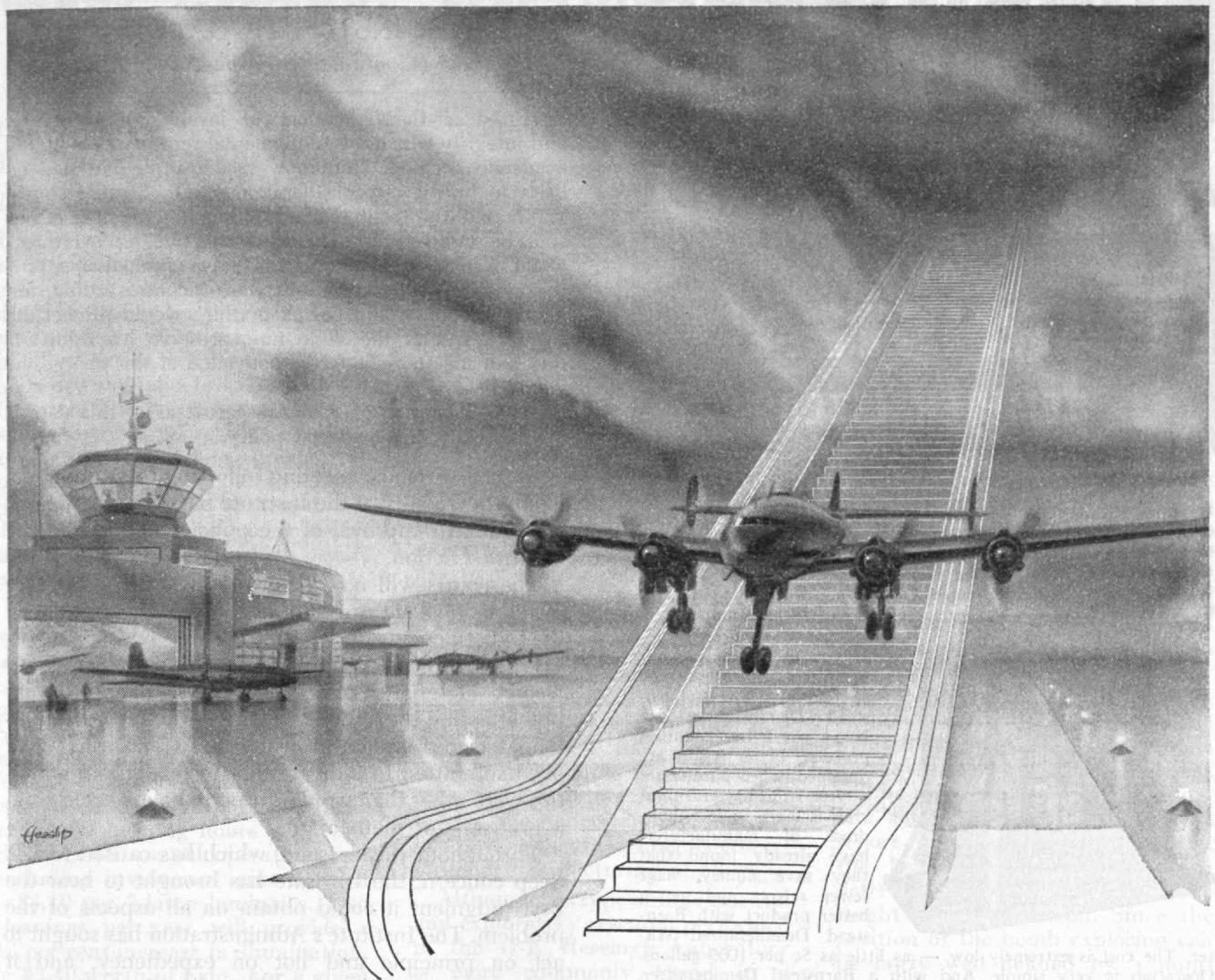
"In 1940, which was long before Professor Struik's political views and associations had been questioned, the Institute, acting in accordance with the traditional academic procedure followed in nearly all large universities, granted him an appointment to its faculty with tenure. Once granted, the well-established rights of tenure can be honorably withdrawn only on evidence of a

(Concluded on page 38)

Celebrating their 45th anniversary since graduating from "Boston Tech" on Boylston Street, members of the Class of 1906, and their wives, gathered for a well-attended reunion at Snow Inn, Harwichport, Mass., on June 13, 1951. Those present when this class photograph was made are: (left to right, front row) Michael J. Gibbons, Herbert J. Ball, Mrs. Norton, Harry L. Lewenberg, Dr. Lemuel D. Smith, James W. Kidder, Allyn C. Taylor, Edwin B. Bartlett, William G. Abbott, Burton W. Kendall, Chester A. Hoefer; (second row, kneeling) Edward B. Rowe, Sherley P. Newton, Floyd M. Fuller; (third row, standing) Otto B. Blackwell, Andrew B. Sherman, Mrs. Sherman, John F. Norton, Mrs. Rowe, Mrs. Lewenberg, Mrs. Hoefer, E. Sherman Chase, Mrs. Coes, Harold V. Coes, Mrs. Guernsey, Mrs. Chase, Mrs. Taylor, Andrew Kerr, Mrs. Kidder, George R. Guernsey, Mrs. Fuller, Mrs. Kendall, Mrs. Coey, Stewart C. Coey, Malcolm G. Wight.

Sidney B. Moody





Escalator from the sky

Remember a few years back when overcast and low ceilings closed airports . . . canceled out airline service? When folks were saying, "they'll never lick weather . . . never operate with the regularity the traveling public demands"?

Today, however, the demand is for accommodations . . . because the demand for regularity is being fulfilled. And one of the major factors in this conquest of weather has been ILS (instrument landing system), which alone has eliminated over 55% of former bad weather cancellations.

ILS is virtually a *radio-beam escalator*, with related instrumentation in the cockpit. A small instrument with cross pointers enables the pilot to guide the plane, both horizontally and vertically,

down this gradually descending beam to a prompt landing on the designated airstrip. Thus ILS, together with long-range, high altitude flying over radio signal highways, is virtually sweeping bad weather aside.

This cross-pointer indicator, vital to ILS, is also a WESTON development . . . the result of leaders in aviation seeking the answer to this critical problem here at instrument headquarters. Just as leaders in all other industries turn to WESTON for the instrument solution to problems involving measurement, recording, or control. WESTON Electrical Instrument Corporation, 635 Frelinghuysen Avenue, Newark 5, New Jersey . . . manufacturers of Weston and TAG-labue instruments.



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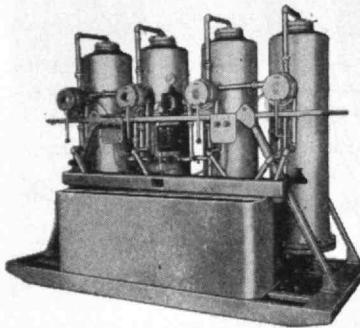
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THE INSTITUTE GAZETTE

(Continued from page 36)

disregard of the obligations of loyalty, responsibility, and integrity which are fundamental requirements in any academic position. Until now the Institute has had no basis to justify a reconsideration of Dr. Struik's status.

"In 1949 the Institute stated: 'Should a member of our staff be indicted for advocating the violent overthrow of the American Government or other criminal acts, or if the evidence of such actions were incontrovertible, immediate action would be taken which would protect the Institute and at the same time preserve his rights. If this staff member should be convicted of this charge, he would be discharged.'

"The suspension of Professor Struik as of this date is in line with our announced policy."

At its first regular meeting following this announcement, the Faculty of the Institute passed a unanimous resolution in approval of the policies underlying the Institute's action.

The courts will now determine whether Professor Struik is innocent or guilty of the charges brought in the indictments.

Professor Struik has never been given access to "secret" material or projects or any classified information affecting the national security. He has never participated in classified projects. No evidence has ever been submitted to indicate that his classroom activities were other than would properly be expected from a professor of mathematics.

Throughout this episode, which has caused M.I.T. deep concern, the Institute has brought to bear the best judgment it could obtain on all aspects of the problem. The Institute's Administration has sought to act on principle and not on expediency, and it has acted on the firm conviction that the policy outlined in the statement of May 3, 1949, was the honorable and proper one for an American institution dedicated wholly to American ideals and traditions and to the advancement of truth. In accordance with these ideals and traditions, the Administration will not knowingly employ a member of the Communist party.

Freshman Week End

T RADITIONAL Freshman week-end exercises at the Institute began on Thursday, September 13, with an attendance of 625 freshmen, representing about four-fifths of the 744 enrolled in this year's entering class. For the first time in the history of the freshman orientation program, participating students were housed together in the east campus dormitories.

At their first class luncheon the freshmen were greeted by E. Francis Bowditch, Dean of Students, who, in succeeding the late Everett M. Baker, is beginning his first academic year as dean of students, and by Robert M. Briber, '52, President of the senior class and of the Institute Committee. The luncheon inaugurated a busy four-day week end designed to acquaint the new men with the normal procedures of campus and classroom life at the Institute.

What GENERAL ELECTRIC People Are Saying

C. E. EGELER

R. F. VANDEN BOOM

Lamp Division

ILLUMINATION MAINTENANCE: Illuminating engineers, and to a lesser extent, consumers of light in industry, have long realized the gradual but serious cumulative loss in illumination resulting from dirt on lamps and reflectors. Most manufacturers simply are not aware that where there is no regular cleaning, the light loss may be as much as 50 per cent. This is no doubt due in part to the paucity of actual test data regarding the rate of depreciation in lighting levels which occurs under various service conditions.

The operating cost of a lighting system always involves energy, lamp and lamp replacement (labor) costs. In a typical medium-sized plant using two-lamp 40-watt fluorescent industrial units, with energy at $1\frac{1}{2}$ ¢ per kw-hr, 85¢ net lamp cost for a 40-watt fluorescent lamp, a 50¢ cost of random lamp replacement and 4500 burning hours per year, the over-all annual operating cost excluding investment amortization is \$8.10 per 2-lamp luminaire. Two cleanings per year will provide a 42 per cent increase in illumination, or \$3.40 worth of light. For a given average illumination the required investment will likewise be substantially reduced. Even though this investment factor be ignored, any cleaning cost up to \$1.70 per fixture pays a real dividend. With systematic maintenance, a two-lamp 40-watt fluorescent unit usually can be cleaned for about 35 cents.

Defense mobilization imposes on industry an imperative responsibility for the most effective use of production facilities and manpower. Good lighting becomes more vital than ever, particularly when it is remembered that in the increment of needed workers there will be a greater proportion of older people who need the higher illumination levels to compensate for impairment of vision and age.

National Technical Conference of the Illuminating Engineering Society
August 27-30, 1951

C. G. SUITS

Research Laboratory

METALLURGICAL RESEARCH: The gas turbine, most modern powerplant for aircraft, locomotives, and other machinery, could be made appreciably more powerful with the same fuel consumption by relatively small improvements in certain metals.

Present gas turbines operate at a turbine inlet temperature of 1400 to 1500 degrees Fahrenheit. When this temperature can be increased a mere 100 degrees (by developing metals able to withstand such increase in temperature), the fuel required for a given output may be decreased five to seven per cent, and, equally important, the net power output from a plant of given size may be increased 15 to 20 per cent.

The future of many products of industry rests squarely upon future improvements in the metallic materials of which they are made. That is the simple reason for the extensive activity here directed toward the understanding, improving, developing, designing, engineering and manufacturing of alloys.

Although the type of fundamental and exploratory research performed in the G-E Research Laboratory is more commonly found in a university environment, the experience of 50 years has shown the great value of this approach in an industrial laboratory. Such research has added materially to the standard of living of the American public.

Metallurgy Conference
Schenectady, New York
August 22, 1951



L. L. GERMAN

Knolls Atomic Power Laboratory

RADIATION MONITORING: To illustrate the radiological aspects of civil defense according to air and surface

types of atomic explosion, I would like to present a system of radiation monitoring which has been worked out by a group in Schenectady for use principally within the first hour after the explosion. Undoubtedly, many effective systems of this nature have been developed throughout the country.

For both types of explosion, it will be necessary to determine the location of the center of the explosion. This task can be accomplished by the use of simple units called "lampshades"—so named because of the shape. The metal lampshade functions on the effect of shadows created by the generated heat and light at the time of the explosion. Mounted at various locations around the target area, so that there will be at least four units within five to ten thousand feet from a burst any place within the target area, a shadow will be cast on the inside painted surface of the lampshade at the time of explosion. Wardens will be assigned to read these units, and should two or more wardens report direction and altitude angle, the headquarters unit can then determine ground zero and the height of the explosion. Since the position of the bomb explosion can be fairly well defined by a minimum of these units, considerable information is supplied quickly by available and simple facilities.

The radiation measurements required for both types of explosions are determined by simple ionization chambers strategically placed throughout the city so as to surround the potential target area. The ideal system would consist of a placement of these chambers on a grid system separated by approximately 1500 feet.

Civil Defense Communications Conference

Syracuse, New York
September 13, 1951

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of whom 21, or 66 per cent, achieved the distinction of listing in *American Men of Science*. Their record is decidedly above the average. Presumably this keeping of the better students happens in all large institutions having good graduate schools.

This result again sheds light on the relation between fellowships awarded and the attendance of good students. The Institute awarded first-year fellowships, assistantships, or scholarships to a higher percentage of M.I.T. men who registered as graduate students than to applicants from other schools (77 per cent compared to 65 per cent, as given in Table I). Presumably, other large schools did the same; apparently if M.I.T. did not compete favorably with his alma mater in regard to fellowship awards, the better student from a large university stayed where he was. Graduates from the smaller schools had a different problem; if they were to acquire advanced training they had to go elsewhere. From these places the Institute could obtain the better student without having to overcome inertia as well as award competition.

The result of this inbreeding in the larger institutions is that non-Institute graduate students tend to come from a wide variety of small colleges, none of which sends very many men. In fact, only from nine other schools did the Institute receive a sufficient number of good students so that at least two are now listed in *American Men of Science*. The record of these schools is shown in Table III.

Two small institutions — Oberlin College and Case Institute of Technology — stand out above the rest and, on the whole, rank above our larger sources, except M.I.T. (within the accuracy warranted by the small numbers). Two Canadian universities have also sent outstanding men; Dalhousie and McGill, but in these cases the *American Men of Science* criterion does not apply.

The complete rating of all schools from which any application came during the eight years uncovers a number of puzzling items. For example, a number of good students from some schools (Union College, Carnegie Institute of Technology, Cornell University, and so on) have applied for admission but very few actually registered. This is in contrast to the situation for Case or Oberlin, where the majority of applicants did come to M.I.T. Again, why did the Institute do so much better in choosing the good men from the University of Michigan than from Cornell, for example. (There is some indication that the system of student advisers and recommenders differed widely at these two schools, for in one case the letters of recommendation were mostly from people who did not know the student very well.) Detailed consideration of a number of specific cases indicates that personal acquaintanceship between faculty members in the M.I.T. Department of Physics and at the school from which the applicant came very materially improved the chance of success of this complicated process of "student-picking-school" and "school-picking-student." Wider range of personal contacts on the part of the Institute staff would quite likely have improved our score.

(Concluded on page 46)

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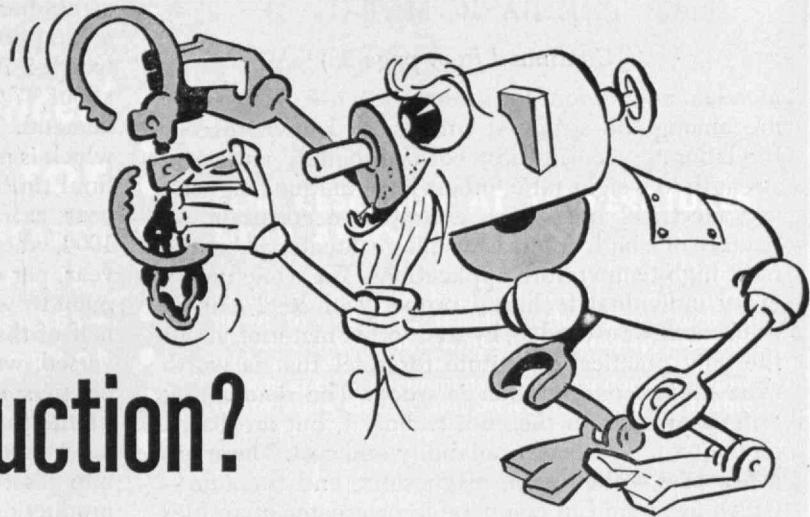
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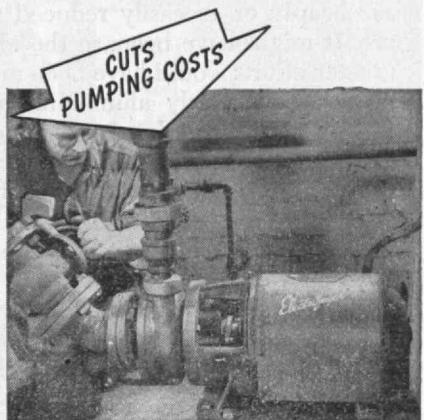
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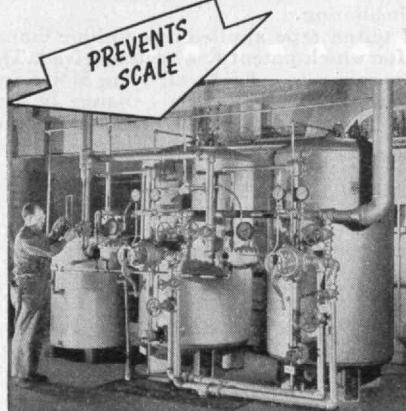
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ALLIS-CHALMERS

THE BASIC METAL

(Continued from page 28)

alone do not account for its extensive use. Some types are among the strongest substances known (except for laboratory curiosities) both absolutely and on a strength to weight ratio; others have unique magnetic and electrical properties; a few have corrosion resistance of a high order, as metals go. Steels still handle most high-temperature applications. Yet while nearly every individual technical property of steel can be duplicated, or exceeded, by some other material, about the only practical substitute for steel that is worth even minor consideration is wood. The dominating criteria are not, in the end, technical, but are based on the twin factors of availability and cost. There are a few ores — aluminum, magnesium, and titanium — which are found in comparable or greater quantities in the earth's crust than is iron ore. None of them are as cheaply or as easily reduced to metal as is iron ore. It might have been, in the absence of iron, that greater efforts would have been made to exploit other metals, particularly aluminum and magnesium, although it is a little hard to imagine how methods of extraction for these metals would have been developed in the absence of a technology created by centuries of effort; and it seems dubious that such a technology would have grown with the same rapidity had there been no iron and steel to support it.

Next to steel, in volume and availability, wood is the most important engineering material. In a year of heavy production, approximately 35 billion board feet

of lumber are produced in this country. Making the assumption that, on the average, 1,000 board feet weigh 2,700 pounds, the United States has available about 47,000,000 tons of lumber, in a year of heavy demand. This does not include wood pulp, much of which is made from trees that could not furnish structural timber. Rather significantly, this country's peak year, as far as lumber production goes, occurred in 1909, when over 44 billion board feet were cut. In that year, per capita production of wood was about 1,200 pounds, while per capita steel production was about half of that. Today the situation is almost exactly reversed, with lumber production at about 600 pounds per person. But the clock cannot be turned backward. As the forests of this nation have shrunk, population has increased, and per capita usage continues to eat into reserves.[†] We could not restore the per capita production of 1909, except possibly under the direst short-term emergency conditions. And even if we could, we would not easily stomach the many unavoidable engineering limitations that would ensue. Properly handled, wood is a very respectable engineering material indeed, with a highly satisfactory strength to weight ratio. But wood cannot fill the gigantic shoes of steel. One cannot easily conceive of a satisfactory wooden landing gear for the B-36 inter-continental

(Concluded on page 44)

[†] In this country the ratio of drain to growth (for combined saw timber and pole timber) has decreased from 4.34 in the 1909-1918 decade to 1.02 in 1944, according to the United States Forest Service.



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These cables have been adopted and approved by ASESA as standard RG cables. The electrical and physical characteristics of these cables are as follows:

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#13 stranded silver-plated copper "Teflex"; diameter .250" plus or minus .005"	CONDUCTOR INSULATION	#22 copperweld "Teflex"; diameter .135" plus or minus .005"
Double silver-plated copper diameter .300"	SHIELD	Single tinned copper diameter .180"
Double "Teflex" layer	MOISTURE SEAL OUTER COVER	Single "Teflex" layer
Double fibreglass braid impregnated with silicone varnish .370" plus or minus .010"	OUTSIDE DIAMETER	Single heavy fibreglass braid impregnated with silicone varnish .240" plus or minus .008"
.14 lbs. per foot	BIW MARKER	Orange tracer
50 plus or minus 2 ohms	NET WEIGHT	.05 lbs. per ft.
29 plus 2 mmf/ft.	IMPEDANCE	73 plus or minus 3 ohms
8,000 volts R.M.S.	CAPACITANCE	20 plus 1 mmf/ft.
10,000 volts R.M.S.	MAXIMUM OPERATING VOLTAGE	2,300 volts R.M.S.
2.0 db per 100 ft.	CORONA VOLTAGE	7,000 volts R.M.S.
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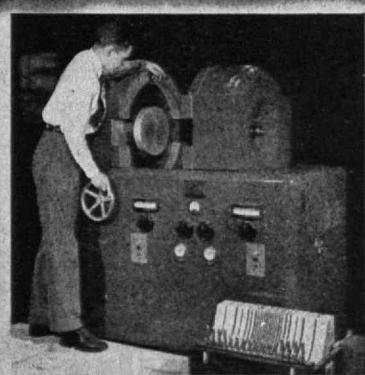
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Harold E. Koch, '22, President
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THE BASIC METAL

(Concluded from page 42)

bomber, of a timber Empire State Building, or of a wooden covered bridge over the Golden Gate.

The overwhelming fact about steel is that, of all metals used in this country (and, it is safe to say, in every other industrialized state) ferrous alloys constitute better than 90 per cent. In 1950, when this country's steel production reached 96,900,000 tons, copper output was 1,054,000 tons, that of zinc was 910,000 tons, lead was still less, and aluminum output was 718,000 tons. Were net imports and metal recovered from scrap to be included, the figures for the nonferrous materials would be raised slightly, but the basic picture would remain unchanged. The needs of the armament program are currently shifting the relative ranks of these nonferrous metals, mainly by causing heavy increases in the output of aluminum and magnesium. The goal is 1,500,000 tons of aluminum, but whether that metal is first or fourth in rank among the nonferrous metals, the position of steel remains dominant.

An index, if not an explanation, of steel's primary importance is its price. Throughout most of the Twentieth Century, the nonferrous metals have cost from five to 20 times as much as pig iron, and the ratios between the costs of the metals in fabricated form do not weaken the price advantage of steel. Iron ore is easy and cheap to mine, or at least it has been to date, and although ores may become leaner, or may be brought from more distant lands, no sharp increase relative to other mining operations seems imminent. Steel is cheap to produce from ore or scrap, not only in terms of needed materials and power, but also in terms of long-established large-scale plants. Its sheer volume of output, the skill and engineering knowledge that have been built about its use, the tremendous chain of suppliers and fabricators, all help to maintain its position. Without exception, other metals have either poor supply situations (rich, large-scale copper deposits are nearly as extinct as the dodo), technically difficult extraction problems (as in the case of titanium), or they consume tremendous amounts of electricity during the refining process (as in the case of aluminum and magnesium).

Almost since it was first manufactured, steel has been the symbol of military strength and industrial might. The United States can take comfort in the fact that, with the decisions and force that characterize its major actions, it is buttressing a fundamental national resource — the capacity to make steel.

William H. Coburn, '11

William F. Dean, '17

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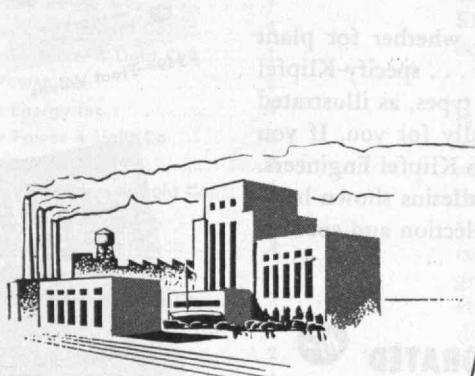


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GRADUATE STUDENTS IN PHYSICS (Concluded from page 40)

Among the major conclusions which can be drawn from this study are that: (1) the Institute plays a disproportionately large part in supplying the country with outstanding physicists; (2) the number of good physicists obtaining advanced degrees from M.I.T. has a positive correlation to the amount of financial support we make available to the entering graduate student; and (3) a disproportionately large fraction of our good graduate students come from small schools. The greatest improvement the Institute could make in our choice of students, to whom teaching fellowships or scholarships should be awarded, would be to devise a better method of selecting the good men who come from the small colleges. In particular, a method for improving the accuracy of information given in letters of recommendation, from the applicant's teachers, would probably produce a considerable improvement in the quality of our graduate physicists.

Another conclusion which is supported by this study is that the performance of those who applied late for admission (March-September, inclusive) was definitely lower than those applying early (October-February, inclusive). The average performance of graduate students in Physics at the Institute would have been improved if admission had been closed approximately around the first of April.

NATURAL FLIGHT (Continued from page 24)

We have already referred to Chabrier's doctrine of regeneration and to those who kept alive this seed. Before 1925, two notable advances were made toward a further understanding of the doctrine. Albert Betz,²⁵ working mathematically, and Richard Katzmayr,²⁶ using a wind tunnel, showed that an oscillating stream of air meeting a wing may reduce wing resistance or even make it self-propelling. Lilienthal¹⁹ had noted this phenomenon by flying a certain type of kite in natural wind; and the children of India have a similar kite which stands vertically overhead, and when struck by a sudden gust, it even moves into the wind, ahead of its owner.

Regrettably, neither the experimental studies nor the mathematical approaches have given us much information on the energy relations involved. René Moineau,²⁷ Henri Girard,²⁸ M. Denis,²⁹ and M. Tricot,³⁰ among others in France, have studied related phenomena. They have shown that vibrating wings or fins in water have what is called auto-propulsive or hyperlifting properties. The latter term refers to an abnormal capacity to sustain weight when in this condition.

The in-and-out or spanwise flow of air, especially in the wing tip section, has not escaped attention.

(Continued on page 48)

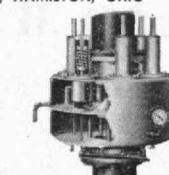
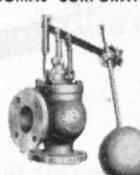
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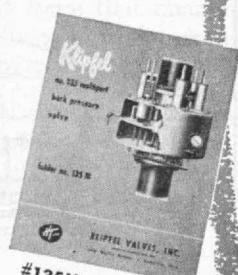
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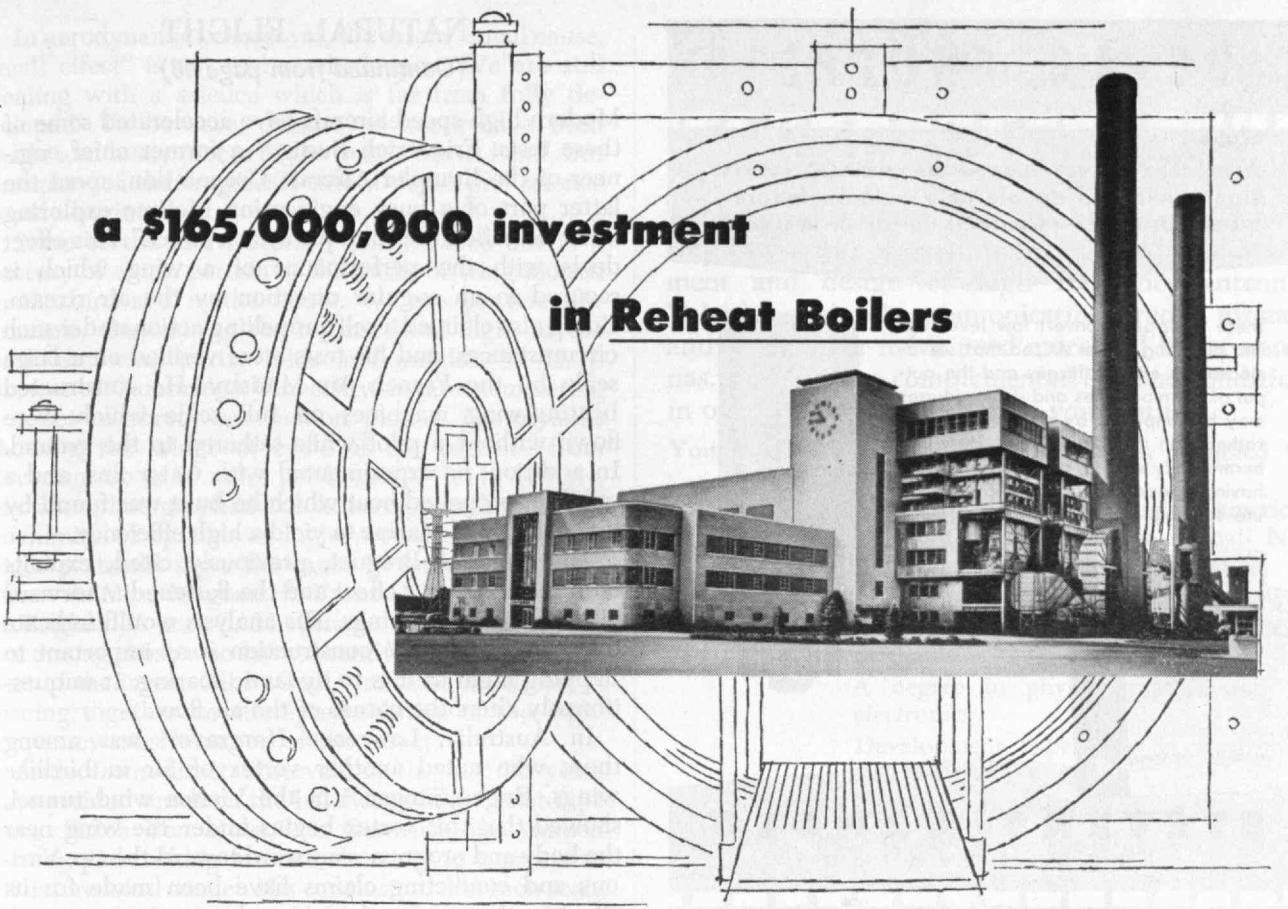
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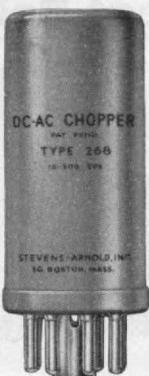
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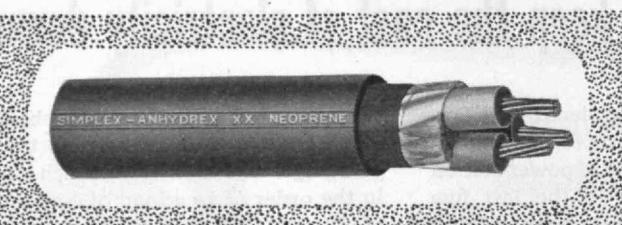
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NATURAL FLIGHT

(Continued from page 46)

Modern high-speed aircraft have accelerated some of these tests. Friederich Budig,³¹ a former chief engineer of the Rumpler Aircraft Corporation, spent the latter part of a busy engineering lifetime exploring what he called the "oblique attack effect." This effect deals with the performance of a wing which is scoured in an angular direction by the air stream. Budig also claimed a self-propelling action under such circumstances, and his tests were verified on a large scale by the French Air Ministry. He constructed beating-wing machines on full scale which were flown without a pilot while tethered to the ground. In addition, he experimented with water fins, and a small fin-propelled boat which he built was found by the Ministry of Marine to yield a high efficiency.

The work of Bréguet, previously cited, exploits both the Katzmayr effect and the flattened M forward view of the bird's wings. His analysis would indicate that the flattened M construction is as important to flapping flight as it is to dynamic soaring. It unquestionably alters the nature of the air flow.

In Australia, Lawrence Hargrave³² was among those who noted another vortex of air in birdlike wings. Eugen Sänger,³³ in the Vienna wind tunnel, showed that this vortex begins under the wing near the body and progresses outward toward the tip. Various and conflicting claims have been made for its effect on the wing performance, but again more work needs to be done to reconcile past observations.

There can be no doubt that numerous phenomena connected with the bird's wing can contribute to the diminution of power required for flight. The Designer who put the wing together seems to have known His business. Undoubtedly progress in flying could be accelerated were we in better position to understand fully the complicated behavior taking place. The large number of permutations and combinations of these phenomena which are possible do provide obstacles in any theoretical or experimental studies to be undertaken. But the gain seems worth the effort.

Suppose that we know of five specific phenomena, each of which separately yields an increase of a few per cent in efficiency. What will the optimum combination yield? We know enough of the situation to realize that it is not likely to be the arithmetical total. Poor combinations may act to seriously diminish the efficiency.

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In aerodynamics, moreover, the axiom "small cause, small effect" is not to be relied upon. We are still dealing with a science which is far from fully developed. To be sure, definite advances have been made and many pieces of the puzzle are at hand. But assembly of the fragments into a developed science is only beginning.

Some of the more definite gains, staked out in a century of work, pertain to the paths of wing motion in the bird and in the insect. We are positive, for example, that during the normal level flight of the bird, the wing partly folds and unfolds. R. H. J. Brown, of Cambridge University, is now completing a series of three-view motion picture photographs showing the wingbeat cycle of the pigeon — from hovering, up to 30 miles per hour. G. Guidi, in Italy, has also photographed the hovering condition. The unanimity of opinion on flight procedure among the pigeons should serve the cause of international harmony. Antoine Magnan, in France,⁹ F. S. J. Hollick, in England,³⁴ and C. H. Curran, in this country,³⁵ are among those who have recently studied the wing-beat of the insect. Albro Gaul,³⁶ another American, is piecing together an attempted solution of the high-frequency muscle action of the insect.

Aside from direct observation, the last 20 years have yielded much on the behavior of the insect-type wing. Erich Von Holst,³⁷ in Germany, has studied beating and rocking insect-scale wings in a precision miniature wind tunnel. His conclusion, that such scale wings can be made to yield lift in almost any direction,

(Continued on page 50)

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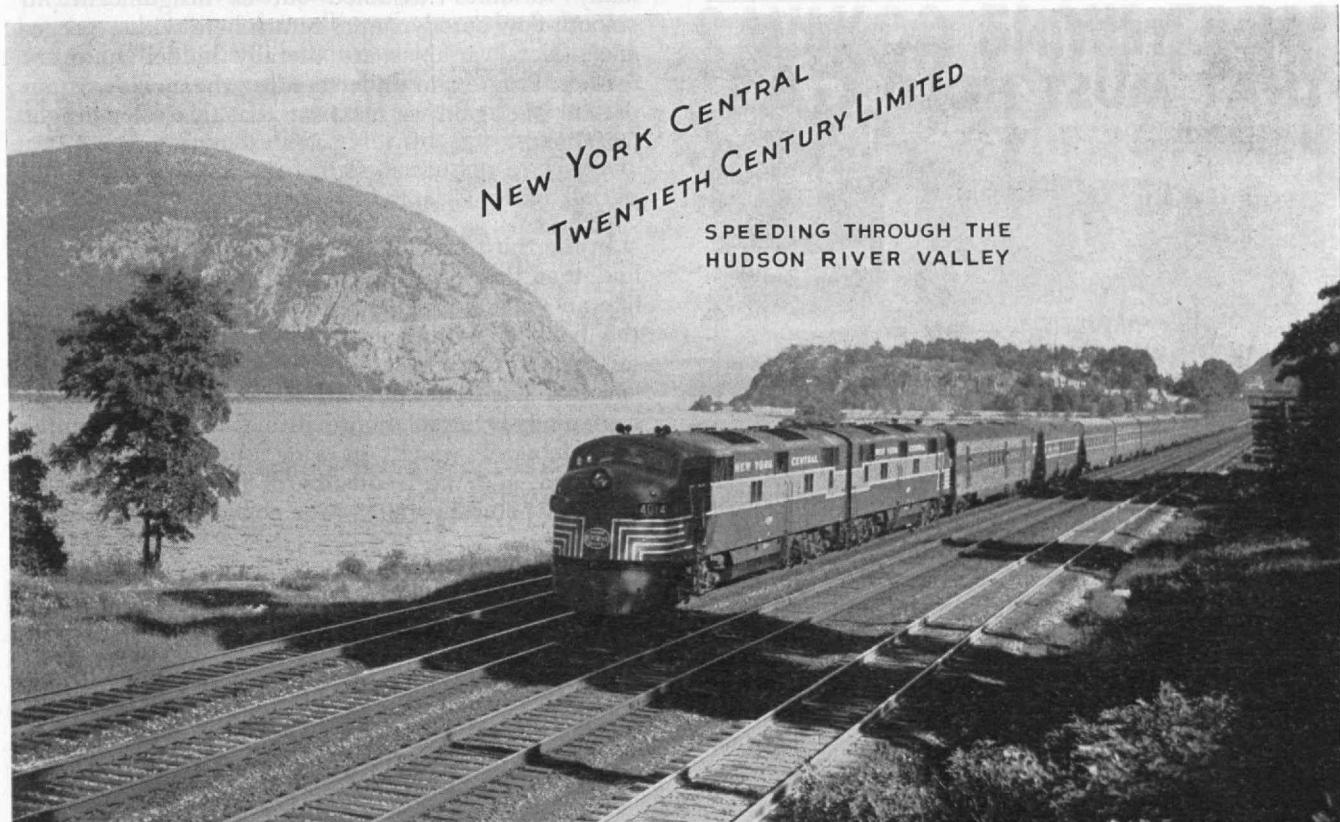
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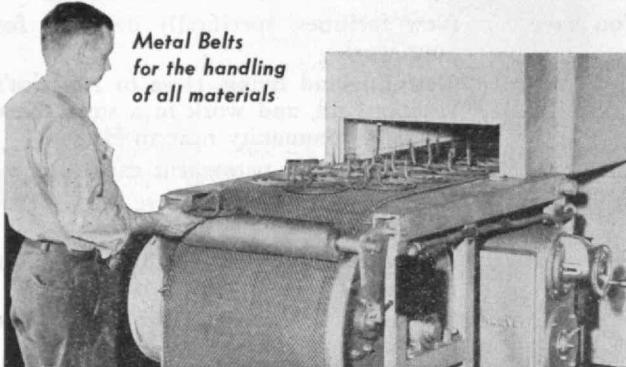
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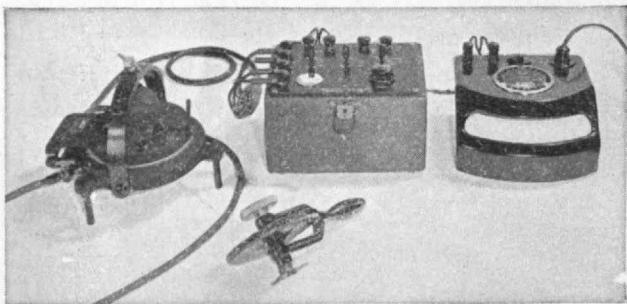


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NATURAL FLIGHT

(Continued from page 49)

tion and at high efficiency, is worth noting. On a somewhat larger scale, Alexander Jordanoglu, in Greece,³⁸ and, on a full-sized scale, William B. Stout, in Phoenix, Ariz.,¹ continue their important experiments. It is clear that nature's flying school is neither devoid of promise nor of students.

In other directions, work such as that of Arthur Fage and F. C. Johannsen³⁹ in England on the frequency of the whole vertical waving motion of the vortices shed by the trailing edge suggests that there may be a close relation between this and the normal wingbeat frequency. The approaches of Hans Wagner,⁴⁰ Hans Goerg Küssner,⁴¹ and their successors to the annoying problem of flutter in wings has widened our horizons. In connection with the problem of regeneration, it is worth noting that this flutter represents a feedback of energy. In the Dayton, Ohio, area C. O. Horst and Adam Stolzenberger⁴² are carrying out research: the one, seeking in the bird-wing design improved performance for conventional aircraft; the other, devising and flying flapping-wing models whose beat, in tune with the aeroelastic frequency of the model, is induced by an unbalanced weight.

The mature point of view must prevail. We cannot now make judgment since the case again is not complete. Tests are limited in application, the mathematical approach unsolved, or *mirabiledictu* funds are lacking to complete the work. However, it should be clear to those familiar with mathematics that the many variables "assumed out as insignificant" in smooth-flow aerodynamics return here with a vengeance. New variables are literally hidden in every feather. Progress in understanding the air flow is apparent, but again we must say that the fuller insight lies ahead.

Engineering Theory

In the third problem area delineated, we ought to find that the basic precepts of natural flight read like an open book. Regrettably, we do not all read the book of nature alike. At last report, the vegetarians and the beefeaters were still at odds. A problem that has here bothered science from its earliest beginnings is the relations existing in a given natural flyer among its weight, its wing area, its wingspread, its speed, and the frequency of the wingbeat. The pioneers naturally fell into a convenient well-worn

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path. For prior centuries, engineers had studied the effect of the wind on structures and on windmills and sails, and they had reduced their results to a ratio expressed as the force per unit area. In aerodynamics, such a ratio is found in practically all formulas involving lift or drag. Referred to as the wing loading, and given in a pound per square foot unit, it is an important figure in aircraft performance. Students of natural flight have sought to use this as the parameter which would aid in the solution of their problems.

Birds vary greatly in wing loading, ranging from a high of about 2.5 pounds per square foot down to about 0.2 pound per square foot. Insects have wing loading of about 0.02 pound per square foot.

From studies of natural flight have come certain fairly general agreements. For example, it is found that, when other factors remain the same, an increase in wing loading is accompanied by an increase in frequency of wing flapping. Furthermore, it appears that if two natural flyers have the same wing loading, the heavier bird with the larger wings will have the lower frequency of beating. As may be detected, there is a contrary note in these two accepted and observed facts. The insect has a very light loading; apparently his wing vibrations should have a low frequency. But we know that the frequency is very high. Accordingly, then, the second factor of absolute weight is evidently quite important. It is this situation which has militated against the wing loading as a satisfactory parameter for explaining the relations sought. Attempts have been made, in other directions, to find a suitable parameter.

One of the obvious uses of such a relation would be the possibility of intelligent speculation on the design of large-scale, beating-wing aircraft. Aircraft constructed according to principles which such a relation suggests would be powerful tools of research. One of the early formulas devised for this purpose, that of José Weiss,⁴³ was called to my attention by Captain Walter S. Diehl. Weiss did not attempt to derive an expression relating weight, wing area, and frequency of beating wings, but was content to establish a connection between weight of the bird or aircraft and its wing area. Weiss's parameter takes the mathematical form:

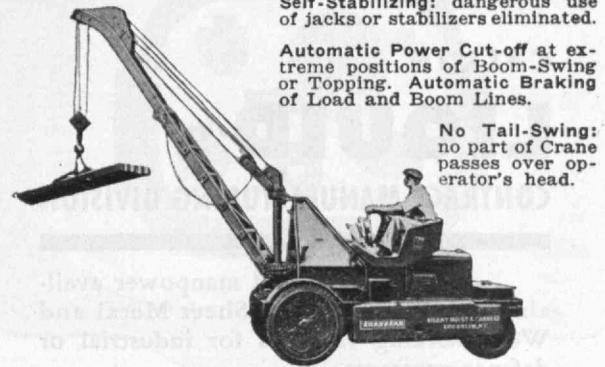
$$K = P/S^{1.83}$$

where K represents a constant for each different type of flying structure, about 8 for the ordinary bird;

(Continued on page 52)

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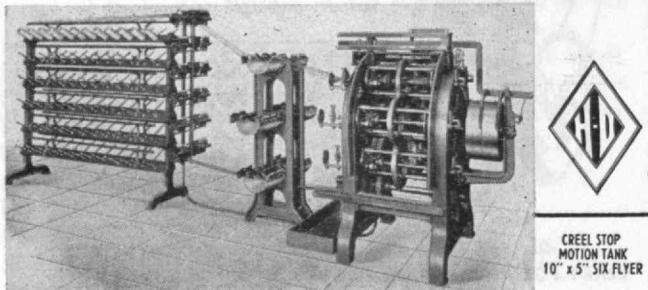
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NATURAL FLIGHT (Continued from page 51)

P is the weight of the structure, in kilograms; and

S is the surface of the wing, in square meters. It will be noticed that the wing area does not enter into this relation linearly but inversely as a four thirds power; Weiss explained the exponent as required to account for the volume of air attacked by the wing.

In the experiments of Alexander Jordanoglu, previously mentioned, the flight performance is checked against anticipated performance, based on a relation developed by Antoine Magnan.⁹ Magnan related wing surface and beat velocity to the lift of the flyer according to the relation:

$$L = KSV^2$$

where L is the lift or weight of the flyer in kilograms; K is a constant, which is about 0.066 for insects; S is the wing surface in square meters; and V is the beat velocity in meters per second.

In an attempt to derive a formula which would comprehend more of the important variables, the author struck off in a radical direction. Two concepts suggested the approach.

The first is that of the "sweep area." Ludwig Prandtl,²² one of the great classic aerodynamicists, suggested this concept in the early days when the exact relation between biplanes and monoplanes was an important question. We have seen that one explanation of lift is that it is due to a reaction caused by thrusting downwards a certain mass of air. Prandtl showed that the volume of air affected by the passage of an airplane during a given time interval could be represented by a cylinder whose length was equal to the distance traveled, and whose diameter equaled the wing span. He called the sweep area the circular area of a diameter equal to the wing span.

The second concept has been mentioned previously; that of regeneration. One of the difficulties in the way of considering this concept has been the lack of any reasonable theory which might account for such a phenomenon. In studying that matter, the work of M. J. M. Hill⁴⁴ on the spherical vortex came to the author's attention. The ball vortex formation bears a close resemblance to the ordinary smoke ring of the cigarette or cigar smoker. In theory, and nearly in practice, it has the property of allowing a discrete



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mass of air to move through the surrounding atmosphere without loss of its identity and at only a small loss in energy. It would appear, therefore, to be the very sort of energy vehicle which the regenerative theory demands. The swept volume of air which had formerly been left as an energy-bearing wake now rolls up and accompanies the vehicle in an airy imitation of a caterpillar tractor. On this basis the following formula for frequency of beating was developed in 1945:

$$F = 4W^{0.833}/M$$

In this relation, F represents the frequency of wing beating in strikes per minute, W is the weight of the bird or aircraft, and M is the weight of the ambient air contained in a sphere whose diameter is equal to the wing span. For sea level conditions, it may also be written:

$$F = 100W^{0.833}/b^3$$

where b is the span of the aircraft in feet; W in pounds. The weights may be measured in any convenient units since W and M have the same dimensions.

This relation has been checked against large numbers of bird, bat, and insect observations. Its success in predicting missing variables is as good as may be expected in biological matters. For the insect it is progressively further in error as the size of the insect diminishes; and this fact suggests that perhaps another variable should be introduced. The matter is still under study. It is well to note, however, that the range of reasonably close predictions cover weight ratios of three million to one. The weight range from a large bird to the smallest possible airplane is only of the order of 30 to one. May we now extrapolate to the airplane scale? Only time and experimental determination can supply the final answer.

If we succeed, and get into the air with flapping wings, certain problems are going to arise. The anti-aircraft gunners will have to revise their advice: "If it flaps its wings, don't shoot." Bleary-eyed duck hunters near the naval air stations had better be sure, too; the duck may fire back.

Engineering Construction

If we inquire as to the engineering practicability of natural flight theories, we find that many notable investigators have reached this point and despaired.

(Continued on page 54)

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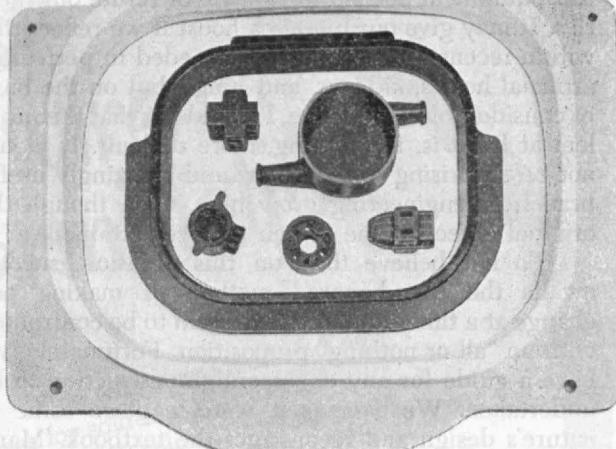
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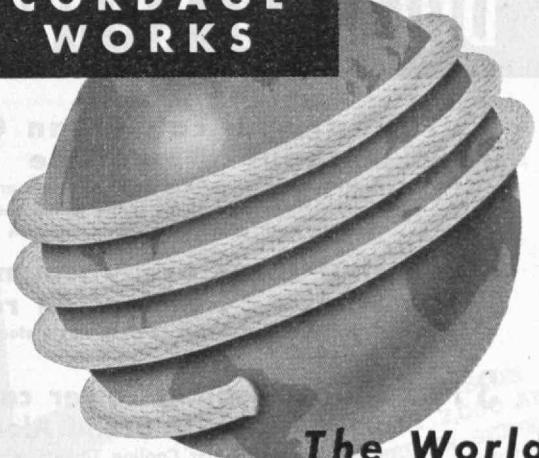


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NATURAL FLIGHT (Continued from page 53)

The task of engineering is to design, construct, and operate the miniature and full-scale models and the test equipment needed to validate or refute our theories. It may give our morale a boost if we reflect that within recent years we have succeeded in perfecting artificial hearts, kidneys, and lungs; but on the basis of considerable experience, I would say that the problem at hand is, if anything, more difficult. It would not be surprising to see a new and amazingly useful branch of engineering grow here, even though the original object of the search is never attained.

I do not believe that, on this occasion, success awaits the time-honored method of making one change at a time. Rather do we seem to be confronted with an "all or nothing" proposition. Fortunately, we have a guide for any engineering construction to be undertaken. We can, as it were, capture some of nature's design and reconstruct the textbook. Man's duplication of some of nature's engineering is fraught with problems sufficient to shake the bravest heart. For example: "throw away the micrometers," "it can be done without metals," "carry parallel compression loads on one member wherever possible," "use members of selected elasticity to carry tension loads, the tension component of bending loads, and torsional loads, with the help of a compression member," "design to spill excessive aerodynamic and hydrodynamic loading," "keep the density fairly high," and "loosen up the joints" appear to be maxims of nature's en-

gineer; but man will have an exceedingly difficult time in following the advice in the textbook.

Nature's school encourages athletics; flying for fun in hurricanes is one of the diversions. The postgraduate department features a study of the nonmetallic, nonpressure volume engine. If you tire of the classroom activities, a glance out the window may show you one of the professors on his day off, landing on a telegraph wire. Coeducational strolls on the campus may be interrupted by the presence of Dean Flittermouse, who has the strange habit of doing his nocturnal take-offs and landings in the upside-down condition. Perhaps it is this which makes his students call him the bat.

We have not a finished business here, but the courage and persistence of the hundreds who have pushed our knowledge this far are pledges of the interest and promise of natural flight. Numerous examples show that we can profit from details. Can we grasp the whole? Can we use it?

Gilbert K. Chesterton, master of the paradox, would find himself very much at home in this field. The competent, specialized theoreticians have often been overwhelmed by the inescapable mass of real detail while the practical masters of detail have been mesmerized by an isolated theory. The genius of intellect and the genius of matter await the situation which can happily unite them. As the arts and the sciences mature, there arises greater need for an over-all guiding philosophy. Progress will need a marriage of these diverse talents. A remark of Garrett Birkhoff in his

(Continued on page 56)

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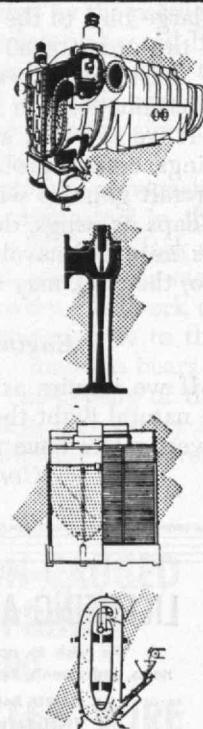
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NATURAL FLIGHT

(Continued from page 54)

book, *Hydrodynamics*, is worth quoting: "I believe that the resourcefulness and ingenuity of the human mind in combining these methods is vastly underestimated in all existing formal theories of mathematical and physical logic."¹⁵ He was referring to induction and deduction, but it may well apply here. We may extract from him also a quotation which fits the entire problem: ". . . science was not built by timid or faltering hands. Let us move boldly forward, seeing what kind of edifice one can construct on these somewhat insecure foundations."¹⁶ Perhaps an elastic structure is perfectly suited.

There exists, the world over, an incalculably large potential of freight and passenger traffic which cannot be tapped by aircraft as we now know them. Furthermore, all design-trend studies show we are moving ever further from serving this neglected area. The expert of the highly developed railway and transport age of the 1890's could hardly foresee the potential which a half century of motor land transport could not only release but produce *de novo*. The same applies to many air experts today. The demands of the more undeveloped areas for cheap bulk cargo and low-rate, low-speed passenger traffic are almost beyond comprehension. The popular personal airplane is nearly as far away as when the Wright brothers first flew. There are fewer such airplanes than small yachts. We sometimes forget that the automobile and the airplane are practically of an age. What a difference in numbers and practical workaday utility there exists between them!

We owe it to our own generation and to the future to seize upon this problem and benefit from the spoils which the conquerors of nature's citadels have inevitably received in reward.

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NATURAL FLIGHT

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GOOD NEIGHBOR POLICY

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sion to bear on the larger problems of the day. The report further suggests that Harvard and M.I.T. should extend their collaboration. It says: "In areas where they are both active, they should compete vigorously and frankly in the spirit in which there is competition in science generally. . . . In areas where they supplement one another they should collaborate." The report recommends continuation of the present arrangement between Harvard and M.I.T., whereby a graduate student in either school may pursue courses at the other with credit and without the payment of additional tuition. And it recommends closer liaison between the faculty members of the University and the Institute. The chairman of the committee which drew up this report was Vannevar Bush, '16, whose close association with M.I.T. is well known. But what may not be as well known is that Dr. Bush is one of the few graduates of the joint school, having received the degree of doctor of engineering in 1916 from both M.I.T. and Harvard.

And so we come to the good-neighbor policy of today which has been extended and strengthened by President Conant and by my chief and predecessor, Karl T. Compton, chairman of the M.I.T. Corporation. We see collaboration taking place freely and spontaneously along a wide front. Graduate students at Harvard take courses at M.I.T. without the payment of additional fees; and M.I.T. students, in about the same numbers, take advantage of the same privilege at Harvard. In the sciences, the departments of the two institutions come together for frequent joint seminars. There are numerous joint research projects, especially in the field of medicine. In World War II, M.I.T. was the center for radar research and development, while Harvard, appropriately, was the center for radar countermeasures. More recently the two institutions have pooled resources to undertake certain important studies for the government in the present emergency. Altogether there is a constant process of cross-fertilization, of faculty members voluntarily working together because they find it desirable to do so, which is much better than being regimented into doing so. To put it into geographical terms, is there along three miles of any river in the world a comparable commonwealth of scholarship and of research resources as we have along the Charles?

The author acknowledges gratefully the able collaboration of Miss Frances L. Van Schaick, research assistant at M.I.T., in the preparation of this article.

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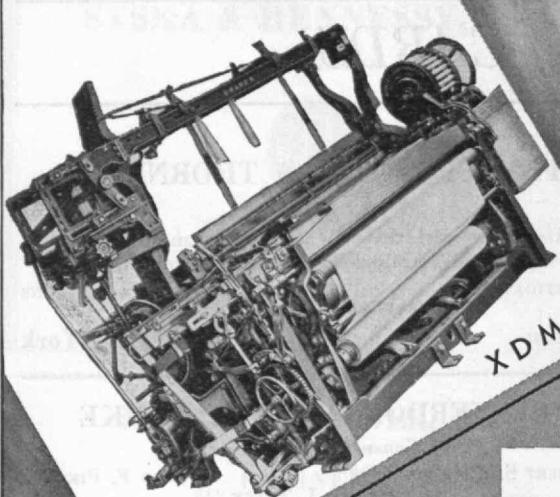
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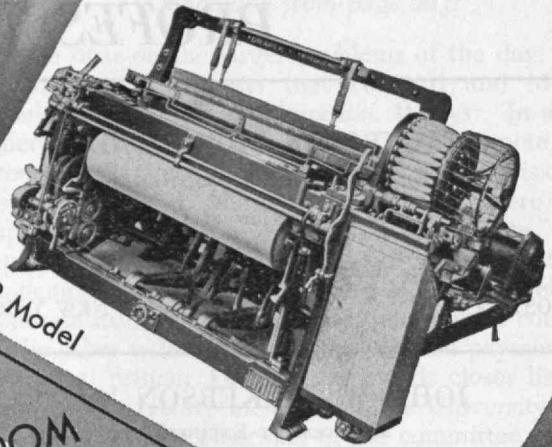
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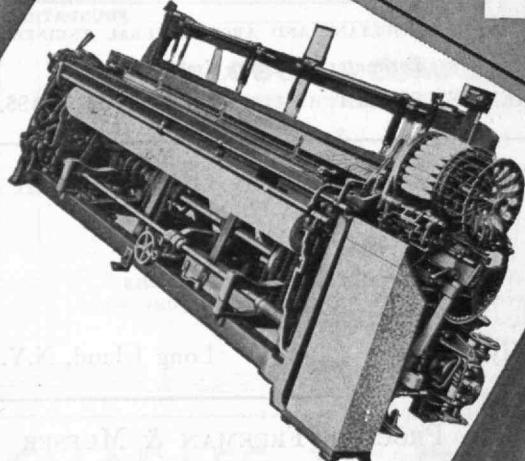


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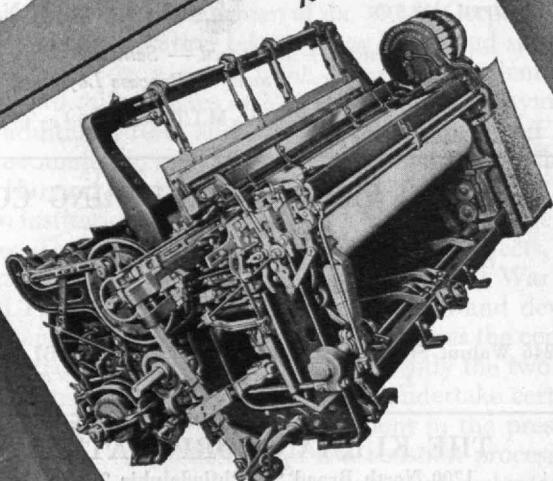


X2 Model

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The M. I. T. Alumni Fund

Because of its importance, this statement by the Alumni Fund Board, already sent to many Alumni, is reprinted here for the information of all.

IN PROPORTION

The importance to M.I.T. of annual alumni giving is such that we, your representatives on the Alumni Fund Board, believe your participation warrants most serious consideration. We believe further that token giving is not enough, that giving should be in proportion to one's interest, ability, and other philanthropic concerns. We therefore earnestly request that you give serious thought to the following recommendations:

- leaf that your giving be in proportion to your interest in education in a free society and in M.I.T. in particular, as compared with your interest in other philanthropies;
- leaf that you give in proportion to your individual ability as determined by conditions of the moment;
- leaf that your giving be thoughtful, that it be done with judgment and balance.

We believe that by the exercise of clear thinking on the part of each of us, our annual Alumni Fund, already an important aspect of Institute financing, can achieve the further role of a major stabilizing force. The assurance of continuing full-scale alumni support may be a deciding factor in determining the course M.I.T. is able to chart in a future filled with uncertainties.

The answer rests with you.

The M.I.T. Alumni Fund Board

Dwight C. Arnold '27	H. E. Lobdell '17
Francis A. Barrett '24	Sherry O'Brien '17
Hugh S. Ferguson '23	Donald P. Severance '38
Alfred T. Glassett '20	George W. Smith '26
Henry B. Kane '24	John J. Snyder, 2-44
Allen Latham, Jr., '30	John A. Lunn '17, Chairman

Alumni AND Officers IN THE News

Honorary Degrees

The honorary degree of doctor of science was presented to ARTHUR G. HAYDEN'01 on June 9 at the commencement exercises of Ripon College in Ripon, Wis.

Northeastern University conferred the honorary degree of doctor of engineering upon HERBERT T. KALMUS'04 at the University's commencement exercises on June 24.

WARREN K. LEWIS'05 received an honorary doctor of science degree from Harvard University in June.

VANNEVAR BUSH'16 was awarded the honorary degree of doctor of laws at the commencement exercises of Colby College on June 11.

West Germany's chief diplomat in the United States presented an honorary doctor of engineering degree to GORDON M. FAIR'16 on September 21, on behalf of the Technical University of Stuttgart.

LEWIS W. DOUGLAS'17 received an honorary doctor of laws degree from Columbia University in June.

Villanova College bestowed the honorary degree of doctor of science upon GEORGE C. MANNING'20 on September 21.

In the Headlines

ROBERT T. HASLAN'11 has been elected director of W. R. Grace and Company of New York.

In September, WILLIAM J. BARRETT'16 was appointed secretary of the Metropolitan Life Insurance Company.

FRANCIS M. KURTZ'22 has been appointed chairman of the board of the American Coffee Corporation, coffee subsidiary of A & P.

DAVID W. SKINNER'23 became vice-president of the Polaroid Corporation, Cambridge, in July.

MAURICE T. FREEMAN'25 has been elected president of the Loomis-Sayles Mutual Fund, Inc., and the Loomis-Sayles Second Fund, Inc., of Boston.

IVAN A. GETTING'33 was elected vice-president, in charge of engineering and research, of Raytheon Manufacturing Company in Waltham, Mass.

Off the Press

PHILIP L. ALCER'15 is the author of *The Nature of Polyphase Induction Machines*, published by John Wiley and Sons, Inc., June, 1951.

An article by GEORGE C. REINHARDT'24 appears in the July, 1951, issue of the *U. S. Naval Institute Proceedings*. Queries Colonel Reinhardt: "Dunkirk: Miracle or Blunder?"

The Audubon Water Bird Guide has been prepared by RICHARD H. POUGH'26 and published by Doubleday and Company, Inc., May, 1951.

HAROLD E. EDGERTON'27, with R. J. Neidrach and Walker Van Riper, wrote and illustrated the article, "Freezing the Flight of Hummingbirds," published in the August, 1951, issue of the *National Geographic Magazine*.

JOHN A. HRONES'34 and GEORGE L. NELSON'43 are coauthors of *Analysis of the Four Bar Mechanism: Its Application to the Synthesis of Mechanism*, published by John Wiley and Sons, Inc., May, 1951.

CHARLES E. CREDE'36 is the author of *Vibration and Shock Isolation*, published by John Wiley and Sons, Inc., July, 1951.

Obituary

- EDWARD N. SAMPSON'75, June 24.
JAMES C. DUFF'86, October 7.
GELETT BURGESS'87, September 18.
PHILIP A. MOSMAN'87, May 16.
CHARLES C. HODGKINS'88, June 10.
HENRY HOWARD'89, August 25.
LEWIS E. JOHNSON'89, March 18.*
JULIAN MILLARD'89, August 29.
ARTHUR E. HATCH'91, May 21.*
BERTHA M. BROWN'92, July 7.*
EDWARD W. J. GRAY'92, June 21.*
HARRY A. LADD'92, June 17.
WALTER T. LITTLEFIELD'92, September 23.
JAMES W. G. WALKER'92, November 2, 1950.*
JULES GODCHAUX'93, July 5.*
PHILIP E. PERRY'93, September 30.
HOWARD S. REYNOLDS'94, August 29.
EDWARD E. ALLEN'95, April 14.*
FRANK M. BRININSTOOL'95, October 18, 1950.
ELLIS C. THAYER'95, July 6.*
ALVA M. BASA'97, June 9.
OWEN H. GRAY'97, May 25.*
ROYAL H. HAYWARD'97, July 10.*
CONRAD H. SLADE'97, September 11, 1950.
IRA G. STUDLEY'97, May 22.*
FRED B. CUTTER'98, August 15.*
CHARLES S. MURLLESS'98, in July.
GEORGE B. PILLSBURY'98, May 18.
CHARLES F. PURINTON'98, July 13.
GEORGE B. SOUTHWORTH'98, June 21.
HENRIETTA C. DOZIER'99, date unknown.
GEORGE E. HOLMES'99, March 23, 1942.*
CLIFFORD M. SWAN'99, August 7.*
FRANK R. SWIFT'99, December, 1945.*
FREDERIC E. EVERETT'00, September 18.
CHESTER A. RICHARDSON'00, September 8.*
A. ROSECRANS BALDWIN'01, date unknown.*
HORACE JOHNSON'01, August 20, 1950.*
KING H. KNOX'01, June 22.*
ROBERT B. MORTON'01, May 19.*
WILLIAM H. RASHE'01, May 9.*
CHARLES R. WOODHULL'01, July 13.*
HENRY L. GREEN'02, June 4.*
JAMES W. SMITH'02, May 17.*
FRANK D. HAYDEN'03, April 3.*
ROBERT F. JACKSON'03, March, 1950.*
JOSEPH MURRAY'03, August 16.*
ROLF R. NEWMAN'03, September 9.
CHARLES P. WATERMAN'03, April 11, 1949.*
ALFRED W. BURNHAM'04, April 29.*
ROBERT DENNIE'04, February, 1947.
STEPHEN E. KIEFFER'04, December 19, 1949.*
PHILIP A. LEAVITT'04, August 3, 1950.*
WILLIAM D. LYNCH'04, date unknown.*
ROSS P. SCHLABACH'05, August 26.
F. CHAS. STARKE'05, June 11.
CHARLES G. VAN BRUNT'05, May 2.
JOHN R. WALL'05, May 12, 1942.
MICHAEL J. AHERN'06, June 5.*
WALTER B. CLIFFORD'06, September 10.*
MRS. NATHANIEL McDONALD'06, June 28.
HARVEY B. ORCUTT'06, April 6.*
EDWARD L. MORELAND'07, June 17.*
JOHN S. NICHOLL'07, July 7.*
JAMES A. KANE'08, January 29, 1950.
STEPHEN L. BURGHER'09, September 2.*
CHARLES A. JOHNSON'09, December 5, 1950.*
GARNETT A. JOSLIN'09, September 20.
FRANK H. REMICK'09, July 13.*
HAROLD SHARP'09, September 9.
DEAN PEABODY, JR.'10, August 7.*
JAMES O. GREENAN'11, July 23.*
ALEXANDER NIMICK'11, November 20, 1949.*
WILLIAM A. SHEPHERD'11, September 25, 1949.*
EWAZO SUZUKI'11, April 4.*
WILLIAM H. BAXTER'12, January 20, 1950.*
HORACE B. FAY'12, March, 1951.
HAROLD W. GREELEY'12, in 1950.
JOHN J. HARTY'13, July 20.*
ALBERTO E. LAVENAS'13, January, 1947.*
DONALD R. DIXON'14, June 15.*
JOSEPH A. BALL'15, August 27.*
WILLIAM S. RUSSELL'15, April 5.
THOMAS D. LEBBY'17, September 1.
FORREST P. SHERMAN'17, July 22.*
WALTER SIMS'17, June 8.*
DANIEL C. STEELSMITH'17, date unknown.*
ROBERT E. FRIEDLICH'19, October 29, 1949.
SYDNEY W. KITSON'20, August 28.
ROBERT L. TURNER'20, May 2.*
FREDERICK W. BINNS'21, June 8.*
FRANK J. O'NEIL'21, June 5.*
HAROLD W. SMITH'22, August 4.
JOSEPH D. ARTHUR, JR.'23, May 31.*
J. RAYMOND DECKER'23, June 19.*
ALBERT A. KENNEY'23, June 4, 1950.*
RAYMOND JOHNSON'24, May 12.
WILLIAM H. MANNING'24, August 24.*
SAMUEL SCHNEIDER'24, March 8.*
JOHN B. TILESTON'25, June 23.*
ANANT H. PANDYA'31, June 1.
C. SAMUEL WOODRUFF'31, in July.
DONALD MCPHERSON'32, June, 1950.
LEONARD B. GIFFORD'33, July 16.*
LEO J. KARAIAN'33, May 17.
HOWARD R. STALEY'35, August 23.
TAKAAKI YAMAMOTO'35, in 1947.*
BENJAMIN M. NEWMARK'48, August 31.
JAMES A. STEVENSON, JR.'49, September 14.
SAMUEL C. BIDWELL'50, July 27.
DUGALD C. JACKSON, staff.
* Mentioned in class notes.

News FROM THE Clubs AND Classes

CLUB NOTES

The M.I.T. Club of Chicago

Our Club wound up its 1950-1951 season on the evening of May 31, when we met for dinner at the quarters of the Western Society of Engineers. Speaker of the evening was Guy Reed, Vice-president of the Harris Trust and Savings Bank and former chairman of the Chicago Crime Commission, who touched on many phases of today's national and international problems in their economic and political aspects, and who gave us one of the best non-Institute talks we have had in a long while.

This meeting also was the occasion for the transaction of club business, and the annual election of officers as follows: Bob Gunness'34, President; Phil Coleman'23, Vice-president; Harlan Davis'40, Secretary; and Bud Meissner'43, Treasurer. Directors elected for a three-year term were Bruce Humphreville'26 and Bob Faurot'44. The four directors holding over in the next year are Louis Metz'23, Dick Meyer'42, John Praetz'28, and Bud Gray'28.

Last season was a good one for The M.I.T. Club of Chicago. We had six events: the Dr. Compton-Dr. Lewis dinner on October 5, the French Lick weekend junket, October 28, the electro-motive plant inspection trip, December 11, the midwestern regional alumni conference, January 27, the President Killian dinner, April 5, and the annual business meeting, May 31. The average attendance per event was 168, and this again helped to sustain our reputation as one of the most active M.I.T. groups in the country. Thanks for the success of the season are due the officers and directors, and to a long list of energetic committee chairmen and members, who put thought behind their planning and steam behind their efforts to give us a variety of programs and an opportunity to get better acquainted.

The Club got off to a hesitant start for the 1951-1952 season due to the unexpected resignation of our President, Robert C. Gunness'34. Bob has taken leave of absence from his job as manager of research for the Standard Oil Company of Indiana to take over as vice-chairman of the Research and Development Board in the Pentagon in Washington. Consequently, he resigned as the Club's top officer at a meeting on August 15 at the University Club. The officers present accepted the resignation with regret and moved Phil Coleman'23, up from vice-president to president. We surely are glad to have as active a participant as Phil to step in the opening and are equally sorry to have to say "so long" to

Bob, even if it is only for a year as is presently intended. — HARLAN H. DAVIS '40 *Secretary*, Precision Rubber Products Corporation, 400 West Madison Street, Chicago 6, Ill.

M.I.T. Club of Hawaii

The Club had a dinner meeting at the Pacific Club in Honolulu on the evening of July 31st. The guest of honor was Rear Admiral Wallace R. Dowd, United States Navy Commandant of the Pearl Harbor Naval Shipyard. The Admiral graduated from Course XII-A, Naval Architecture, in 1923, and six other officers on his staff also graduated from this Course at the Institute and attended the dinner. Altogether there were 28 Alumni present and the Club enjoyed a very interesting address by Admiral Dowd regarding the history and the functions of the shipyards of the United States Navy, particularly the Pearl Harbor yard. The club president, Walter Spalding'10, presided.—SAMUEL L. GRAHAM'24, *Secretary*, 623-5 Pumehana Street, Honolulu, T. H.

Indiana Association of the M.I.T.

Donald P. Severance'38, Alumni Secretary, was the guest of our group at an informal luncheon at the Indianapolis Athletic Club on September 28. Don gave some very interesting notes on the operation of the Alumni Office, as well as news of Technology, other Alumni, and staff members. His afternoon was occupied with a visit to our rather famous Naval ordnance plant, and we tried to impress upon him the crying need for Technology graduates, particularly those skilled in servo mechanisms and air-borne fire-control equipment. This meeting was the first under the new officers, James Sligar'41, president, and Frank Travers'23, vice-president. Congratulations were showered upon John Babbitt'17 for his recent promotion to division engineer of the Baltimore and Ohio Railroad; in absentia to Alan W. Lundstrum'26, who has left us to become vice-president and general manager of the Ohio Fuel Gas Company in Columbus; and a welcome to Melvin J. First'22 who has joined us this season from Louisville. Others present for the luncheon were Russell Fanning'30, Tom Harvey'28, Lowell Holmes'23, and Ray Ramsey'17.—EDGAR B. GODLEY'26, *Secretary*, 6025 North Oakland Avenue, Indianapolis 20, Ind.

M.I.T. Association of Japan

Fifteen top-ranking engineering professors from leading educational institutions arrived in Tokyo around July 5 for a series of conferences lasting approximately 60 days. This special engineering mission was a co-operative effort on the part of General Headquarters, Far East Command, the Supreme Commander for the Allied

Powers (S.C.A.P.), the American Society for Engineering Education, and the Unitarian Service Committee, Inc., of New York City. It is understood that this was the first American engineering mission to visit Japan since the close of World War II.

The names of the 15 professors are: Harold L. Hazen'24, M.I.T., chairman of the Mission; Charles W. Beese, Purdue University; Arthur B. Bronwell, Northwestern University; William R. Chedsey, University of Illinois; Alexander C. Christie, Johns Hopkins University; Albert G. H. Dietz'32, M.I.T.; Barnett F. Dodge '17, Yale University; Homer L. Dodge, Norwich University; Rogers B. Finch'41, M.I.T.; Alfred L. Miller, University of Washington; John A. Sauer, Pennsylvania State College; Ernest W. Steel, University of Texas; Harry B. Walker, University of California; Ford L. Wilkinson, Jr., Rose Polytechnic Institute; and Robert S. Williams'02, M.I.T.

The M.I.T. Association of Tokyo had already prepared to hold a welcome meeting on their arrival at Odawara (entrance to Hakone) on Sunday afternoon after spending Saturday night at Hakone, about 60 miles southwest of Tokyo. Mr. Chatani '22, Mr. Mitsui'18, and Kametani'25 met Dr. Hazen and talked of our plan. Our invitation was accepted and our scheme worked out fine. Mr. Burton and George Yamashiro'42 from S.C.A.P. joined the trip to help to usher these 15 professors. Mr. Mitsui became ill suddenly and he let his son, Osamu Mitsui, take his place. The whole party was numbered to 27, in six cars; that is, 15 professors, Mr. Burton, Mr. Yamashiro'42, Mr. Chatani'22 with his secretary, Mr. Uchida'19, Osamu Mitsui, Kametani'25, and five drivers.

The purpose of this trip was first to get all the professors together for the first time in relaxed condition; the second, to introduce Hakone and the recovery of damages along the highway; and the third, to hold a tea party at Odawara with Japanese members of M.I.T. Alumni. The party left the Imperial Hotel of Tokyo at 2 p.m. on July 7. It is commonly a two and one-half hour drive to Hakone, but we decided to spend the whole afternoon for driving to enjoy the rural scenery and not to miss anything worth for snapshot. At Hodogaya, past Yokohama, the first stop was made to see the rice plants in the rice field. Farmers' houses with straw roof drew special attention. At Banbu of Tototsuka City, we incidentally met a procession of moving-wheeled stage pulled by boys and girls dressed in kimono. It was a rare coincidence that the seventh day of July is observed as the Festival of the Weaver (Star Vega). The local people there were very happy taking that they were highly honored by American visitors to watch and photograph the festival, and they specially performed Bon-Odori (Lantern Festival Dance).

After many more stops for various joy-

ful happenings, we reached our destination, the Un-Kin-So Hotel at Kowakudani of Hakone a little after 6 p.m. The hotel is 100 per cent Japanese house. Each room is furnished by Tatami (grass mats) with Tokonoma (alcove) facing to a beautiful garden. Allotment of sleeping rooms was executed by drawing a lot; then Sukiyaki dinner was started by Japanese drink, "sake," beers, and whisky. Mr. Chatani introduced Japan-made tape recorder and finally "Tech Song" was recorded by us and then we listened to our own beautiful voices. At 11 p.m. the party was dismissed. In a large room, three persons slept side by side enjoying their snoring contests.

After the breakfast of ham and eggs, coffee, toast, and fruits, we started our Sunday driving to see Lake Ashi and the Hakone Shrine. We came down to Odawara City in the afternoon and stopped at Raku-An, Japanese restaurant, where a tea party was arranged by the M.I.T. Association of Tokyo in honor of 15 professors. Tokyo residents of M.I.T. Alumni present were as follows: Chojiro Amano '28, Ryohei Arisaka'17, Yoshinori Chatani '22, Tatsuo Furuchi'14, Taichiro Hori'36, Takeo Ito'39, Masaru Kametani'25, Tamio Kasahara'24, John Kazuo Minami'31, Masaru Miyauchi'29, Kiichi Murakami'29, Uchichi Nabeshima'19, Yukio Otsuki'37, Kichizo Sakakibara'37, Mimbu Sasaki'28, Shinji Togo'32, and George Yamashiro'42 (S.C.A.P.).

At about 5 p.m. we started to Tokyo and on the way we took the way to Kamakura to see the Daibutsu (Great Buddha). We came home to the Imperial Hotel about half past eight. We were so happy when we were given so much appreciation from every one of the Mission. We are very sure that Dr. Hazen, on his return to M.I.T., will tell you more about the trip.—MASARU KAMETANI'25, President, 71 Shimizucho, Suginamiku, Tokyo, Japan.

[Ed. note: Following up Mr. Kametani's last sentence, we asked Dr. Hazen for his comments concerning the Mission's experiences in Japan, and we are very pleased to be able to present to Review readers further interesting highlights from his own pen.]

President Kametani's report recalls vividly some of the Mission's initial experiences in Japan. A few comments filling voids left by Kametani's modesty help to complete the picture. First should be mentioned the fast and generous action of Messrs. Kametani, Chatani, and Mitsui, following their first invitation to the four M.I.T. members of the Mission to be guests of the Association in the famous Hakone region for the first week end in Japan. I told them that difficult as it was to decline such an exciting invitation, I felt morally obligated to do so since the entire Mission, most of whom were personal strangers to each other, would have met each other for the first time only on Saturday morning. This first week end, therefore, was important as a get-acquainted period. To my surprise, a generous impulse and fast thinking on their part soon brought an invitation to the whole Mission to be guests of the Association at Hakone at the sacrifice of leaving

behind most of the M.I.T. members who had planned to attend. However, a tea on Sunday afternoon did include all of these. This invitation was accepted with the result partly described in Kametani's letter.

The week end was a marvelous experience from beginning to end. On the trip out our hosts were most patient with our group who were not going to miss a thing even if we never reached our destination. The Tanabata, or Weaver Festival, of July 7 virtually intoxicated the entire group with its color and beautiful folk dancing. Since the Association kindly provided on this day the only bright sunshine that we enjoyed for two or three weeks, the color camera fans who made up the majority of our party became scarcely responsible for their actions. The Un-Kin-So Hotel was much more than a hotel. It was a former Mitsui summer house, well up in the mountains, enchantingly nestled in a carefully groomed, "natural" setting of semitropical lushness. Simple but beautiful materials and design and fine workmanship impressed us with Japanese skill in the building art. We felt that the Japanese had given serious attention to functional design in the contemporary sense before we had in this country.

The entire week end thrilled our whole group and literally pulled from the non-M.I.T. members of the Mission the voluntary admission that M.I.T. men can provide superbly fine hospitality.

The M.I.T. Club of the Lehigh Valley

Ladies' night and the annual meeting of our Club took place at the Saucon Valley Country Club, near Bethlehem, Pa., the evening of May 25, 1951. We were very fortunate in securing the M.I.T. President, James Rhyne Killian, Jr., '26, as the speaker for the occasion. The election of officers took place after the dinner, resulting in the unanimous election of the slate proposed by the nominating committee, whose chairman was Louis Wilson'14, of Palmerton. In addition to your Secretary, and the Treasurer, Arthur F. Gould '38 of Hellertown, whose terms run for two more years, and three members of the executive committee, Hugh H. Brenan'25, Allentown, Louis Wilson'14, Palmerton, Basil W. Parker'33, Riegelsville, whose terms run for another year, the following were elected: George Farnell'41, Phillipsburg, N.J., as president; John D. Briggs '42, 131 Wall Street, Bethlehem, Pa., as vice-president; three members-at-large of the executive committee for two years, Edmund J. Flynn'19, Palmerton, Michael V. Herasimchuk'39, Fountain Hill (Bethlehem, Pa.), and Isidor Loss'22, Phillipsburg, N.J. It is to be regretted that the letter of resignation of George Farnell as president was received on August 26. Our Club will miss him. He joins the Carrier Corporation at Syracuse, N.Y., and our best wishes go with him.

Dr. Killian reached Bethlehem about 10:00 a.m. He was taken on a short tour of the Bethlehem plant of Bethlehem Steel Company; the party including Mike Herasimchuk'39, Paul Cogan'13, Malcolm Blake'25, and your Secretary. We had a

glimpse of the coke works, the rolling of structural beams, an open hearth plant, a forge shop, the large machine shop, and that is about all you can see of a large steel plant in a couple of hours.

Martin D. Whitaker, president of Lehigh University in Bethlehem, was luncheon host at Saucon Valley Country Club to some 30 assorted persons serving as a sampling of Allentown, Bethlehem, and Easton. This in honor of Dr. Killian, who spoke a few words. Eugene Grace and a few Bethlehem vice-presidents were present, also some of the club officers. Both Mr. Grace and Dr. Whitaker spoke. The Episcopal bishop of Bethlehem contributed a few words. We gathered from Dr. Whitaker that he had flanked the club officers with Lehigh men (Dean Congdon sat next to your Secretary) so that some of the ability of M.I.T. men to raise money for their alma mater might rub off on, and infect, said Lehigh men.

The evening dinner meeting started as usual with a half hour for punch. M.I.T. people present included: J. T. Acker'24, E. C. Ahlberg, 10-44, W. V. Bassett'39, M. S. Blake'25, D. J. Blickwede'48, H. H. Brenan'25, J. D. Briggs'42, Allison Butts '13, W. M. Cline, Jr., 29, P. V. Cogan'13, J. M. Cook'49, H. M. Cyr'18, J. V. Eppes '50, George Farnell'41, E. J. Flynn'19, C. W. Cotherman'13, A. F. Gould'38, G. F. Halfacre'18, M. V. Herasimchuk'39, C. H. Herty, Jr., '21, E. R. Johnston, Jr., '47, J. R. Killian, Jr., '26, P. A. Lamb'29, Isidor Loss'22, H. T. Lyons'27, H. V. McMurray'38, Juri Markus, 2-44, G. J. Meyers, Jr., '29, Henry Moggio'28, C. R. Muilenberg'25, S. L. Muther'34, E. A. Richardson'19, J. M. Smyser'35, L. A. Wilson'14, and O. P. Young'20. In addition to 35 Alumni, there were approximately 29 guests, mostly wives of Alumni, a very good turn-out for our Club.

Dr. Killian, who was introduced by Charles H. Herty of the research department of the Bethlehem Steel Company, spoke on the need for the allocation of students to technical schools of the country during this period of emergency. It was pointed out that the technical societies believe that only 12,000 graduates might be available a few years hence when some 25,000 to 30,000 will be required, unless adequate steps are taken to insure the continued supply of trained men. These figures do not include other types of college men necessary to the maintenance and expansion of our economy to meet the increasing requirements. Parenthetically, it was only a very few years ago that Dr. Whitaker, our luncheon host, had spoken of the need for trained scientists, and the great deficiency in the number of such being trained for the more exacting requirements of pure research, necessary to insure that the United States would maintain its lead in science. It has been recommended that a committee should be chosen, responsible to the president of the United States, to comb draft lists and insure the continued supply of men to technical schools.

Dr. Killian then proceeded to note that the M.I.T. would not adopt accelerated courses during any period of emergency now regarded as possible, which decision is a common purpose of six other large

engineering schools. It has been felt that any accelerated courses lead to a decrease in the proficiency of graduates therefrom, a result in itself inimical to the national security and economic progress. In conclusion, Dr. Killian noted that there had been no appreciable decrease in the number of students at the M.I.T. during the present emergency, at least up to the present, but that after this past June a decrease of some 20 per cent might be expected.

Mention was made by Dr. Killian of the School of Humanities, the new (Sloan) School of Industrial Management, the policy of the M.I.T. towards the breaking up of its Faculty for the advance of the war effort, and the determination to keep such warwork in Cambridge, so far as it might be possible, in order to keep the Faculty together. He noted the methods, used in handling new research projects, which aimed at the elimination of those preconceived points of view which so often tend to hinder, or make impossible, the solution of problems. Your Secretary would tend to emphasize the imperative requirement that all research should be referred back to the most basic principles, as he has noted time and again the tendency for research to fall into a rut when successive small steps of development are the order of the day and work is started not too close to such basic principles. New buildings and the care of students were noted. Some mention was made of the importance of psychologists in engineering work, examples being in the fields of acoustics and of communications engineering.

In view of the small number of actual members from the upper reaches of the Valley, most club meetings are held in the Easton-Bethlehem-Allentown section. We try to make it possible to choose at least two meeting dates out of three so as to encourage visits from outlying Alumni until such time as meetings may be scheduled further afield. Beginning with November, up through March, it is not too pleasant traveling at night in the mountains, so few come from very far away. Actually, we have approximately 300 names on our list of Lehigh Valley residents who are Alumni, but seldom have as many as 40 present at meetings and probably have fewer than 40 paid members. If any of you men from the west or north of the district feel that we are ignoring you, write to us and also talk to those near you who are Alumni.—EDWARD ADAMS RICHARDSON '19, *Secretary*, 3015 N. Center Street, R.D. 2, Bethlehem, Pa. Offices at the Bethlehem Steel Company, Publications Department.

M.I.T. Club of Milwaukee

Our Club again took advantage of an invitation by Harold Koch'22, and held its annual picnic at the Koch residence on Pewaukee Lake on September 8. We were fortunate in having an ideal day and an excellent turnout of the members, with their families and several guests, approximately 80 in all.

Among the members attending were M. P. Allen'18, Jack Ballard'35, M. F. Biancardi'40, W. R. Bohlman'49, W. W.

Bonns'99, Frank Briber, Jr., '43, Fred Gruner'41, Arthur Hall'25, Dan Hoffman '47, T. B. Hogg'47, Edwin Hulbert, Jr., '36, C. W. Jackson'49, Harold Koch'22, Martin Kuban'37, Charles B. Mayer'05, Jack C. Monday'51, Robert Muzzy'50, Max E. Nohl'35, Jan Peyrot'49, Fred Port '40, Dr. L. D. Smith'06, H. H. Valiquet'03, Emerson Van Patten'24, Milton Vogel'47, Herbert Voss'50, Helmut Weber'50, and Stuart Westerfeld'31. The picnic had a decidedly international flavor in that not only had the Koch's just returned from visiting their daughter in Norway, but our guests were from Holland, Mexico, and Sweden.

An election of officers was held, resulting in a white ballot being cast for the following slate as proposed by the nominating committee: M. F. Biancardi, President; Jack Ballard, Vice-president; Emerson Van Patten, Secretary; Chester Meyer'36, Treasurer, Arthur Hall, outgoing president, called on Mike Biancardi, our new president, for a few remarks, and we were assured of an interesting year to come, if the members continue to co-operate and support the club activities as in the past. — EMERSON J. VAN PATTEN'24, *Secretary*, 6160 North Kent Avenue, Milwaukee 11, Wis.

M.I.T. Club of New Hampshire

The spring meeting of the Club was held at the Eagle Hotel in Concord on May 10. Twenty-seven members of the Club were present and we had 14 guests. Many of the guests were wives of members as this year we decided to invite the ladies. A social hour was enjoyed before the banquet at which many renewed old acquaintances and partook of the excellent punch prepared under the special formula of Paul George'22, manager of the Eagle. At the start of the meeting, the group sang "Arise Ye Sons of M.I.T." with Mrs. Atherton, wife of the Secretary, at the piano. Glenn C. Williams'42, Associate Professor of Chemical Engineering at the Institute, gave us a most interesting talk on jet-propulsion illustrated with many slides.

Officers were elected for the ensuing year consisting of Eugene Magenau'34 of Concord, President; Henry B. Mitchell'32 of Amherst, Vice-president and Representative to the Alumni Council; and Blaylock Atherton'24 of Nashua, Secretary-Treasurer.—BLAYLOCK ATHERTON'24, *Secretary*, 142 Main Street, Nashua, N.H.

The M.I.T. Club of New York

Our golf party on June 29 at the Scarsdale Country Club was one of the best we've ever had. The sun shone until we were on the sixth, seventh, or eighth holes and the rains stayed long enough for all of us to completely relax for the second nine. It was almost the undoing of F. E. Russell'28, who had a 37 for the first nine and soared to a 39 for the second nine to become the new club champ. Larry Davis '22, the champ practically since the game was invented, started with a 41 but steadied to come in with a 37. Nathaniel Krass '18, who said he kept an honest score, won top honors with a 152. Larry Davis an-

nounced he would contribute another cup to the Club and would leave it up to the Club to determine how it would be awarded. Joe Littlefield'17 toastmastered the dinner and handed out prizes to almost everyone. Morgan Cooper'47 is to be thanked for the work he did in making it a good day, along with Chuck Springer '23 and Al Glassett'20 for arranging the date with their club.

Our fall season will get off to a great start with the fall smoker on October 3. Ruppert's Brewery has opened its spigots to us and no speeches are planned. We are inviting the 6,500 Alumni in this area to the affair and look forward to a big turnout. — Pete Grant'35 has a full program lined up for this year. On November 3 we are holding our annual steak-stein dinner. We have a caterer who promises to supply all the steak we can eat. We are going to repeat our dinner-dance party in December, for last year's affair was a great success. The groundwork is already laid for formal dinner in February. We are trying to get a speaker of world-wide reputation, and should be able to make the announcement shortly.

Joe Littlefield'17, who was re-elected president for this year, is building up the working committees and is especially interested in volunteers for our Class Organization Committee. He is attempting to bring each class together through a class representative for tables at the club parties, or even functions for the class itself. Anyone interested should contact the Club. — Lunch is served every day at club headquarters. We'll be glad to see you. — RALPH C. WILTS'41, *Secretary*, American Blower Corporation, 50 West 40th Street, New York 18, N.Y.

M.I.T. Club of Schenectady

The third Tuesday of April found the Club at luncheon at Ferro's with the principal speaker Sam Stratton, noted local news commentator and city councilman. Mr. Stratton discussed foreign relations, particularly with respect to current developments in Korea. A general informal discussion period followed Mr. Stratton's address with some very interesting points brought out by Lieutenant Colonel John F. Lucey'29 who had served in Korea prior to the present conflict. Among those who attended this luncheon were: Karl L. Wildes'22, Schenectady Club representative on the Alumni Council; D. E. Irwin, General Electric Company, Personnel Division; also P. L. Alger'15, J. H. Burnham '34, L. F. Coffin'49, L. H. Dee'35, H. E. Harris'44, G. M. Ketchum'41, E. S. Lawrence'47, J. F. Lucey'29, W. B. Rodemann '44, and Hansjoerg Stern'50.

In May, the Club again assembled at Ferro's to hear John Holt, II, Field Director of the United World Federalists, who led a lively discussion on the World Federalist Movement. Mr. Holt presented several pertinent points on World Federalism and then opened the meeting for a general discussion. From the number and caliber of questions put to Mr. Holt, the members of the Club certainly evidenced a great deal of interest and thought on the ways and means to peaceful living in this world. The following alumni members were present: J. E. Acker'38, W. W. Aker

'41, P. L. Alger'15, E. R. Barriere'49, C. F. Barrett, Jr., '34, D. C. Berkey'42, Francis Brown, Jr., '48, E. H. Cabaniss'38, Harold Chestnut'39, E. S. Lawrence'47, C. C. Lawry, Jr., '39, J. F. Lucey'29, J. H. Macleod'41, H. J. Moser'27, W. B. Rodemann '44, A. A. Root'43, R. W. Stanhouse'41 and Hansjorg Stern'50.

Hal Chestnut, chairman of the Nominating Committee, announced the results of the election of officers for the year 1951-1952. The following candidates were elected: E. S. Lawrence'47, President, R. W. Austin'42, Secretary-Treasurer. — E. S. LAWRENCE'47, *Secretary*, Building 99-102, General Electric Company, Schenectady 5, N.Y.

M.I.T. Club of Southern California

The Secretary just had the pleasure of reading comments and extracting dollar bills from nearly a hundred replies to the mailing of the 1951 directories. Most also enclosed the \$2.00 dues for 1951. "Excellent" was a favorite expression. Five people wrote that they would like to be more active. The chairman of the Directory Committee, Golsan'34, will be partially repaid for his efforts by: "Most interesting; the committee should be commended"; "excellent and useful"; and "Good idea. Glad to have it." Manley'23 writes: "My orders to North Carolina have arrived and I want to take a rain check on attendance at a Governors Meeting." He included a gift with the dues and directory, as also did McKim'48, Rubin '18, Carl Johnson'01, Keely'29, Lawrason '17, Maxwell'15, Messer'31, Sohier'03, and Manley'23. These are gratefully acknowledged.

All Alumni should kindly note that their blanks are sent on to Treasurer MacCallum'24, who sends them on to President Golsan'34. Similarly, the questionnaires of last spring went to Treasurer MacCallum who sent them to the originator, Hereford'24, who has transferred the responsibility of answering those who volunteered on committees to his assistant, Wyle'41. Wyle telephoned me last week saying that he had 200 to process. This rather lengthy explanation is important and if any Alumnus has not received a reply, he may write me direct. In handling a large number of blanks, there are sure to be some errors but the replies have been received and are appreciated.

On June 26 the Club had the great pleasure of entertaining Gale'29 at a luncheon at the Chapman Park. He outlined prospective plans for the second national conference of M.I.T. here on January 26, which is to cover the Pacific Coast area. A motion was carried that the Club extend a hearty invitation and that for the present the executive committee of the Club take charge and report to the fall Governors Meeting. Among those present were Beebe'10, Row'23, Hereford'24, Herrick'24, Cunningham'27, Thormin'27, Atkinson'29, Hiller'31, Golsan'34, Strauss '38, and class secretaries Morton'13, Grantham'25, Cullison'41, and the guest of honor, Gale'29.

At the meeting on September 5, reports of progress on arrangements were given

on the conference as well as the meeting of November 6 at which Karl Compton was given a warm welcome. Appreciation was expressed to Golsan'34, Hunn'28, Nelson'48, and Morton'13 for mailing out over 1,200 directories, and to Collier'18 for copies of the minutes of the last two meetings mailed to all officers and secretaries. Treasurer MacCallum'24 furnished itemized reports, for all present, of income and expenses to date, showing a very satisfactory cash balance. All Alumni are very welcome to attend these meetings on the first Wednesday of each month, and all are urged to bring in constructive ideas. Many have asked for weekly luncheons down town in Los Angeles, and if two or more will manage these, they will be inaugurated.

With deep regret the death of Clarence Row'23 is announced. He was a hard and useful worker as an Alumnus and as chairman of scholarships. Those on the Development Campaign Committee remember his untiring efforts and practical thoughts. As chairman of the meeting of the nominating committee, he had a great part in the calm and wise selection of the present officers and the writing of the constitution. His work is not in vain. His memory will live.

The Alumni will be interested in the recent annual conference of the Heat Transfer and Fluid Mechanics Institute, held at Stanford, as our class secretary for 1926 and former vice-president, Geyer'26, was one of the experts in attendance, and the speakers were Hughes'49, Landis'50, and, from the M.I.T. Faculty, Drs. Gilliland'33, Shapiro'38, Rohsenow, and Clark, 2-46. As regards the subjects, the Secretary regrets that these bring back the mental effort of trying to follow Professor Berry in temperature-entropy. — The card from Dublin of Lobdell'17 was enjoyed with envy at the last Governors Meeting. We hope to see him out here soon; also hope to have a return engagement of Secretary Gale, and definitely Secretary Severance'38. In fact the coming year promises many rare occasions. — HIRAM E. BEEBE'10, *Secretary*, 1847 North Wilcox Avenue, Hollywood 38, Calif.

CLASS NOTES

• 1886 •

Very little has been heard from members of '86 since March when the notes for the May issue were written. Clifford, Mackintosh, and Campbell made contributions to the treasury which, with the balance on hand, was sufficient to cover the cost of the March, April, and May council meetings and leave a balance of \$9.87, the balance as of September 1, 1951. We shall need from \$25 to \$50 more to cover the 1951-1952 meetings.

In June, Mrs. Chase and I made a flying trip to Seattle to witness on June 13 the graduation of my twin granddaughters from the Garfield High School of that city. This was strictly a "flying" trip, both

going and returning, as we were limited for time. Everything went very well going out, and we saw the grandchildren in cap and gown receive their diplomas. We were to leave Seattle on a United Air Lines plane on the 19th at 9:00 P.M. for our return trip; but at breakfast that morning were notified by telephone from the local airline office that a strike of their pilots made it necessary to cancel all flights and that if we wanted to fly back within a week, we should cash in our tickets and make new reservations. New reservations, indeed! Not a through passage for two could be had on any line, although one agent promised he could take one of us to New York and the other to Butte, Mont. This did not seem particularly helpful. After another day of anxiety and with a little "pull" we were given seats on a Northwestern Air-coach making six stops between Seattle and New York (no food served aboard) and grounding at the Idlewild Airport, 14 miles from La Guardia Field and our Boston plane! We felt lucky, however, to have been able to locate any plane and reach home safely.

I had hoped on the trip to make contact with Killinger in San Francisco and Gamwell in Bellingham, Wash., but was unable to reach either. A letter from Gamwell, recently received, tells of his not having been at home because of his presence in various cities during the rose season, judging roses at rose shows. He has done this for 48 years in Portland and elsewhere and hopes to last out two years more to complete a half century of judging. About the same time a letter came from Ingalls: "This June would be our 66th reunion. In next class notes you might mention who of us remain. I think of Harry Clifford. Like myself he is S. B. Then there is yourself and I think that Jim Duff still lives in New York. You might mention some of our distinguished members. I think of Charles H. Woodbury, the great artist, and Alfred I. du Pont. It is time to begin to think of reminiscences. The Class of '86 antedated Gelett Burgess '87 of the Purple Cow and the Stein Song. We were the Class to break the tradition of the Freshman Ball. Arthur Little'85 and Ike Litchfield'85 started *The Tech*. As a sophomore I was admitted to the staff of Volume II and as a senior I was editor-in-chief. We had a small alcove in Rogers Building. The basement of Rogers was a dungeon into which only Course III men were admitted."

To act on Ingalls' suggestion I would report that the present living members of M.I.T.'86, omitting S.M.A. Alumni, as far as I have the information are: Buswell, Campbell, A. T. Chase, W. C. Chase, Clifford, Coffin, Doolittle, Duff, Gamwell, Ingalls, Jordan, Low, Mackintosh, H. P. Merriam, Pierce, Prescott, and Worcester. Among the members of '86 who were actively connected with the Institute after graduation that I remember personally were D. P. Bartlett, Clifford, Locke, E. F. Miller, Noyes, and Robbins. If any who read these notes know of others, will they kindly communicate with me. The Secretary checked this list with the Alumni Secretary who gives the same names and adds Foss and Kimball as well as the dates of each man's term. If enough '86 men are

interested in this detail. I will send it for publication in a later Review.—ARTHUR T. CHASE, *Secretary*, Post Office Box 4, Island Creek, Mass.

• 1889 •

The Society of Chemical Industry presented its Perkin Medal to Henry Howard on April 27 at a joint meeting of the American section of the above society with the American Chemical Society, the American Institute of Chemical Engineers, and the Electrochemical Society. Quoting from the New York *Journal of Commerce*: "Mr. Howard's important contributions to American chemical industry, which are recognized by the award of the Perkin Medal, have included: developments in the production of heavy chemicals, particularly sulfuric acid; the use of Spanish pyrites as a source of sulfur for chemical purposes; development of the use of bauxite from the British Guiana deposits as a chemical raw material; and the invention and improvement of instruments and apparatus used in chemical manufacture. For his inventions in these fields, he was issued 89 U.S. patents. He was a pioneer in improved labor relations and wrote the original workmen's compensation law of Massachusetts. Through the Manufacturing Chemists' Association, Mr. Howard was a key person in the development and growth of the synthetic organic chemical industry in the United States during and after World War I. Mr. Howard is a native of Jamaica Plain, Boston, Mass. . . . He was for 32 years connected in various capacities with the Merrimac Chemical Co., Boston, now a part of the Monsanto Chemical Co. Subsequently he was for ten years connected with the Grasselli Chemical Co., now a part of E. I. du Pont de Nemours & Co., Inc. During his active career, Mr. Howard was prominent in the Manufacturing Chemists' Association of the United States, having served as chairman of its executive committee for 22 years. He is a charter member and past president of the American Electrochemical Society (now the Electrochemical Society, Inc.), active member and past president of the American Institute of Chemical Engineers, and member of the American Chemical Society."

Franklin W. Hobbs ended 60 years in the woolen and worsted textile industry in January of this year; all of that time being spent with one company, the William Whitman Company, Inc. Mr. Hobbs is now chairman of the board and still goes to the office one or two days a week. Following graduation from M.I.T., Mr. Hobbs became associated with the Institute as an assistant instructor in the Mechanical Engineering Department. A year later, he entered the employ of the Arlington Mills, which is now a division of William Whitman Company, Inc. He was named assistant treasurer of Arlington Mills in 1895 and continued in that position until 1902 when he was made treasurer of the company. In 1913, he was elected president of Arlington Mills, a position he held until 1946 when he became chairman of the board of the Whitman Company. Mr. Hobbs served as president of the National Association of Wool Man-

ufacturers from 1926 to 1933. During 1910 to 1912, he was president of the National Association of Cotton Manufacturers and in 1948 was elected an honorary member of this association. From its inception in 1930 to its liquidation in 1950, Mr. Hobbs was chairman of the board of the Textile Foundation, Washington, D.C. He is chairman of the board of Wentworth Institute in Boston, a life member of the M.I.T. Corporation, and a director of the Arkwright Mutual Fire Insurance Company, Boston. Mr. Hobbs is a member of the American Society of Mechanical Engineers, New York; the Newcomen Society, Philadelphia; the Boston Chamber of Commerce, Society of Colonial Wars, Sons of the Revolution, and a former president of the Episcopalian Club of Massachusetts.

We regret to announce that Lewis E. Johnson passed away on March 18 in West Palm Beach, Fla., at the age of 86. He was born in Waterloo, Iowa, in 1864, the son of a pioneer banker. He married Grace Brown of Winchester, Mass., in 1891 and lived in Wilmington, Del., for a year before taking a position with the Pennsylvania Steel Company at Steelton, Pa. It was in 1899 that he was sent to England to design and bid on a railroad bridge to be built in Burma. The following quotation concerning this bridge is taken from a Waterloo newspaper: ". . . Johnson's eventual plan called for an enormous traveling crane with a 120-foot boom. The bridge was to be built in sections, the first out 40 feet with a 40-foot supporting trestle. As the construction progressed, the traveling crane would move out over the newly built portion, lower materials to men on the ground, who would rivet the sections in place. . . . Johnson designed the bridge from his office in the Pennsylvania Steel Company . . . from a contour plan of the gorge sent by British engineers who laid the railroad up from Rangoon. . . ." In 1899 he married his second wife, Mary Alford of Waterloo. Mr. Johnson went to Bethlehem, Pa., in 1916 when the Bethlehem Steel Corporation acquired the Pennsylvania Steel Company. He was chief engineer in charge of fabrication, retired on a pension in 1922 after 30 years of service and moved to Florida in 1941. He is survived by his son, Leland B. Johnson of Winnetka, Ill.

• 1890 •

On Alumni Day in June, John and Mrs. Batchelder, John Crane, Frank Greenlaw, Charles Sherman, and George Packard were at the luncheon at Du Pont Court. All looked well and were in good spirits. They joined in writing notes to Mrs. Goodwin and Mrs. White, who had been present a year before, extending to them our heartfelt good wishes for health and comfort, which notes these ladies have graciously acknowledged. Crane and Packard attended the banquet that night and Alumni Secretary Severance '38 has sent a photograph showing the latter opening a bottle of beer with as much studious care as if it were explosive. Our June notes brought a reply from Bertram Davis saying he had spent 10 months at his old scene of action in Oklahoma but has been back in Ashland, Mass., with a

broken leg. We are sorry to hear the latter and hope this finds him well recovered. Miss Bragg, who for several years has been living on Dartmouth Street, Boston, close to the old M.I.T. location, has moved to 59 Orient Avenue, Melrose, Mass., where her address is in care of George Nicoll, though she continues to spend some time each summer at her old home in Marblehead. The July, 1951, *National Geographic* magazine has 20 pages with wonderful colored pictures on "Wonderland in Longwood Gardens," Pierre du Pont's magnificent estate not far from Philadelphia, developed by "25 years of careful planning and work under his supervision." There are fountains, lakes, a water garden, conservatories covering two and one-half acres, a theater, and magnificent organ, all open without charge (except Sunday) to the public. This is only one more of Pierre's many contributions to public enjoyment and education.—GEORGE A. PACKARD, *Secretary*, 53 State Street, Boston 9, Mass. CHARLES W. SHERMAN, *Assistant Secretary*, 16 Myrtle Street, Belmont 78, Mass.

• 1891 •

Our 60th reunion was celebrated by an afternoon dinner at The Country Club, Brookline, with the following 16 members present: The Reverend William C. Brown, Carl Bunker, H. I. Cole, J. L. Damon, Gorham Dana, Walter Douglass and son Donald, Edward Earl, Horace Ford, Frank Howard, F. C. Moore, Arthur W. Pierce, Carleton Read, Ernest Tappan, Joe Warren, Harry H. Young, Salmon Wilder. We also had 15 letters of greetings and regrets from: George T. Atkinson, Lewis A. Dunham, Edward W. Donn, Jr., Sylvan L. Stix, Walter E. Hopiton, Ambrose Walker, Herbert S. Kimball, George H. Spooner, Edwin C. Smith, W. H. Lawrence, Leonard A. Wheeler, Edward R. Wait, Alexander W. Moseley, George M. Warner, Francis B. Choate. These letters furnished competent excuses such as distance, physical conditions, and so forth. Horace Ford in person and a letter from Harry Clifford accounted for our two Honorary Members. The time was spent most enjoyably in reminiscing and repartee with some serious talk about M.I.T. past, present and future. Young, Damon, Bunker, Warren, Pierce and Howard attended Alumni Day activities and sat at the 60-year '91 luncheon table in Du Pont Court. After viewing Harry Young's big globe in the Charles Hayden Memorial Library, Young, Damon and Howard were entertained in Harry's apartment and went from there to the "Stein on the Table" banquet where we met Pierce and shared a table just in front of the speakers' position, with two of the other old-time classes. We felt that we maintained the prestige of '91 at the fine dinner, listened to the interesting reports and plans for M.I.T.'s future, and shared in the well-warranted enthusiasm of the meeting. When the party broke up we retired with our "Stein from the Table," and the thought in our minds of how different things were 60 years ago.

We have to report the change of address of Ambrose Walker to 262 Commonwealth Avenue, Boston 16, Mass. Also,

that Philip Marquand, whom we have not seen since our 50th anniversary at Swampscoot, is a patient at the Valley-head Hospital, Concord, Mass.

We missed Arthur Hatch, one of our most faithful and loyal members, at the 60th class dinner, and were much surprised that we had no word from him. We have just learned by inquiry, that he died last May 21, after a very short illness, although he had not been well for some little time. He was born in Charlestown on April 9, 1869, attended the Boston Latin School, and graduated from M.I.T. with our Class. He married Annie Franklin Mullin of Somerville on March 21, 1900, and enjoyed 45 years of very happy family life, during which time he lived at Chestnut Hill and had a fine summer residence at Barrington, R. I. They had no children. After his wife's death, he made his home with an old friend in Weymouth. After graduation, he made a bicycle tour in Europe with Billy Palmer, and then was connected with the Worthington Pump Company until 1897 when he went to the Bay State Dredging Company of Boston, becoming vice-president and general manager in 1900 and president in 1911. In 1940, he became associated with the J. S. Packard Dredging Company of Providence, R. I. After leaving the Packard Dredging Company, he became associated in the real estate business with Charles E. Fitz and Company in Boston, and later with J. D. K. Wills and Company in the same line of business. He continued with them up to the time of his death. The following quotation from a questionnaire which he filled out several years ago gives a brief summary, in his own words, of his business experiences: "During my eighteen years of dredging operations (which I may truly say have been 'out of sight' along the New England Coast, from New York to the Canadian line, I have been at the same time interested in waterfront construction work such as sea walls, wharfs, and so on, having been associated for four years with Roy H. Beattie, Inc., engineers and contractors of Fall River and Boston."

Your Secretary is still hoping for notes of interest for The Review from all '91 members.—FRANK W. HOWARD, *Secretary*, in care of Bemis Associates, Inc., Post Office Box 147, Watertown, Mass. Telephone, Watertown 4-5910.

• 1892 •

Carlson, Ober, Burnham, and the Secretary represented the Class at the luncheon on Alumni Day last June, but only Carlson and the Secretary were present at the banquet at the Copley Plaza in the evening. The Secretary also attended the dedication exercises at the Burton House, named in honor of Alfred E. Burton, first Dean of Students at the Institute, under whom, as professor of Civil Engineering, many of our classmates sat for instruction in surveying, geodesy, and navigation. His family was represented at the exercises by his son, the Honorable Harold H. Burton, Associate Justice in the United States Supreme Court.

The Secretary has to report the passing of three members of our Class. During the past summer Bertha M. Brown, who grad-

uated with us with the S.B. degree in Course VII, died on July 7 at the Glendale Hospital, Jamaica Plain. During a long career after graduation, she specialized in biology and public health and qualified for the CPH degree at M.I.T. in 1921. Miss Brown had been a member of the faculty of Vassar College about the turn of the century and had taught at the State Normal School, Hyannis; Brookline High School; the Garland School of Homemaking; and at university extension courses in Boston. She also had studied at the Marine Biological Laboratory, Woods Hole. She was the author of several books and had written magazine articles on school gardens and the teaching of elementary hygiene.

Edward W. T. Gray died on June 21 at his home, 14 Clinton Avenue, Montclair, N.J., after a long illness. He had been a resident of that town for more than 48 years. After attending Dartmouth College, he was with us for a year or two but was not designated as a member of any particular course. He joined the New York Construction Company in 1913. He became vice-president of that concern as well as secretary and a director, retiring in 1930. Later he became vice-president of Thompson-Starrett Company of New York, retiring from that concern previous to 1940. He was a member of the Dunworkin Club of Montclair. He leaves his wife, Mrs. Gertrude Colburn Gray; two daughters, Cora Lee Gray at home and Mrs. Reginald S. Hall of Essex Fells; two sons, Henry E. Gray of Tulsa, Okla., and E. W. T. Gray, Jr., of Nutley, and four grandchildren.

Late this summer the Secretary received notice of the death of James W. G. Walker at East Brownfield, Maine, on November 2, 1950. Other than he was with us as a member of Course I, the Secretary has no information regarding his career.

Next June we are due to take some recognition of our 60th anniversary. Other than a suggestion that we get together for a luncheon in the vicinity of Boston shortly before the Alumni Day exercises, the Secretary has received to date no other comments from the members of the Class. We hope to hear from others during the coming winter before deciding definitely on a plan. Kindly send along comments to —CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

[Mrs. Walter M. Newkirk paid an unexpected and pleasant visit to The Review on September 24 upon her return to Radnor, Pa., from a summer visit in Maine. She was especially interested in visiting the Kales Clinic at the Institute as she has known the Kales family for many years. She expressed interest in reading the 1892 class notes, particularly now that plans are beginning to formulate for the 60th reunion.—Ed.]

• 1893 •

The 58th anniversary meeting of the Class was held on June 12 at the Engineers Club, 96 Beacon Street, Boston. In response to 53 notices, mailed only to members of the Class residing in the New England states and Metropolitan New York, 20 replied with regrets that it would be impossible for them to attend the

meeting. Seventeen members of the Class, however, were present including: M. B. Biscoe, J. B. Blair, L. B. Buchanan, J. S. Codman, Clarence E. Fuller, G. B. Glidden, F. H. Keyes, H. M. Latham, E. I. Leeds, Edward Page, E. S. Page, A. S. Pevear, L. W. Pickert, A. A. Shurcliff, C. M. Spofford, C. M. Taylor, and J. F. Tomfohrde.

Preceding the luncheon the group enjoyed a social hour with appropriate liquid refreshments. At an informal business meeting held between courses during the luncheon, the treasurer's report showed the Class to be in quite a satisfactory financial condition, due chiefly to the interest which has accrued on the legacy of two thousand dollars donated by A. B. Edwards at the time of his death.

Since the time of our previous meeting in June, 1950, 10 members of the Class, including our president, Bert Dawes, had passed away. To fill this vacancy, L. B. Buchanan was unanimously elected president, and all other class officers were re-elected for the ensuing year as follows: J. B. Baxter, Vice-president; Charles M. Spofford, Treasurer; G. B. Glidden, Assistant Treasurer and Assistant Secretary; and F. H. Keyes, Secretary. It was also voted that we should hold another luncheon meeting in June, 1952. It should be of interest to note that as of June, 1951, we still carried the names of 79 classmates on our mailing list out of the 361 who were associated with us as freshmen when we entered the Institute in 1889.

Jules Godchaux, born in New Orleans on July 11, 1872, died at Touro Infirmary on July 5. Before entering the Institute, he attended school in New Orleans, and graduated from Phillips Exeter Academy in 1888. He entered the Institute as a freshman in 1889, and was associated with our Class four years in the Course of Mechanical Engineering. In 1893, he became affiliated with the Godchaux Sugar interests, founded by his father, and soon became prominently known in the sugar industry with which he acquired both national and international recognition as an engineer in charge of constructing sugar factories. He was a founder and life member of the American Sugar Cane League, an honorary member of the Louisiana Engineering Society, chairman of the board of the Raceland Bank and Trust Company, a director of the State Agriculture Credit Association, and a member of Iota chapter of Phi Gamma Delta Fraternity. A more extended account of his earlier business activities and social connections will be found in the report of our 30th anniversary meeting. Godchaux is survived by his widow, the former Cora Tanner; a sister, Mrs. Gus Mayer; two brothers, Charles and Walter Godchaux, and several nieces and nephews. —FREDERICK H. KEYES, *Secretary*, Room 5-213, M.I.T., Cambridge 39, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 38 Chauncy Street, Boston 11, Mass.

• 1894 •

Although items are not as numerous as one could wish, it is a privilege to report some news regarding members of the Class. Just before writing these notes, a telephone conversation with Alan Claflin

brings the good news that he made a perfect recovery from the operation of a few months ago, is in splendid health, and is full of personal and business activity. He attended the great chemical conclave recently held in New York, and is now looking forward to the October convention of the American Textile and Colorists Association, also to be held in New York. There he will rendezvous with Harold Chase of the research department of the Dan River Mills in Virginia, and the two old friends will doubtless have a fine reunion. Chase is reported to have had a completely successful operation for cataracts on both eyes, and to have better vision than for several years past. Hearty congratulations, Chasie! Claffin also stated that he had an enjoyable meeting with Charlie Meade at Poughkeepsie, and that he is in good health except for occasional severe attacks of arthritis in his knees, which require the use of a cane on such attacks. Meade lives with his daughter at Poughkeepsie. Interestingly, Meade's daughter, who is at the Vassar College Department of Art, is associated with Claffin's daughter-in-law, Mrs. Agnes Claffin, who is the head of the Department. Claffin also reported that his son, Avery Claffin, President of the French-American Bank, has just returned from Europe, but his pride in reporting on his family was especially noticeable in his statement that he now has a great grandson in addition to several great granddaughters. These are the grandchildren of Mrs. Virginia Pratt of Seattle, whom those who were present at our 55th anniversary will remember as a charming and youthful-appearing lady, and an eminent artist.

A telephone call to H. O. Lacount, now retired but still living on College Avenue in West Somerville, disclosed that he had just returned from a 10-weeks stay at his summer home at Cape Porpoise, Maine. Lacount finds his time well occupied, as he is very active in church and civic and charitable organizations and in home affairs, as his wife at times is in somewhat impaired health due to a type of asthmatic trouble that the doctors seem unable to cure. This is one field in which medical progress has been slow and uncertain. George Taylor is active as a manufacturer's agent for mechanical engineering equipment, as for many years past. His office is still at 31 Milk Street, Boston, and his home is on Granison Road in the attractive town of Weston. Arthur Shurcliff, who has one of his sons as a business associate in landscape architecture and engineering, has been very active in connection with the landscaping along the new Charles River Embankment, and also at the Shoppers World in Framingham, which is the last word in modern suburban or regional shopping centers. Shurcliff writes: "The one [project] which will be of most interest to our Institute friends is the extensive work the Metropolitan District Commission is carrying out on the south and east sides of the Charles River Basin from the dam upstream to the bridge, which in our day was called the Cottage Farm Bridge. My work is in co-operation with all the engineers and architects, but I am especially responsible for the 'landscaping' of the project, including the position of shore lines,

bridges, the new canoe way, position of memorials, boat landings, the extensive tree and shrub planting, foot paths, and the development of a new lagoon opposite the oval of the Hatch Music Shell. Between the dam and the Longfellow Bridge my office is doing similar work for the Charlesbank Playground with its ball fields, swimming pool, gymnasium, children's play space, and the landscaping which is associated. All the above work is made necessary by the construction of the new wide adjacent motor roadways."

It is with regret that the Secretary reports that Mrs. George Owen had a bad fall on September 1, breaking both bones in one leg, and will therefore be hospitalized for several weeks. Happily, good progress is being made toward recovery. All will feel sympathy for her and for George, and hope for a speedy and complete return to normal activity.

In June, Owen, Charlie Meade, and George Sherman attended the reunion of their fraternity, Phi Beta Epsilon, at Pine Orchard, Conn. Doubtless "a good time was had by all." Claffin and Ned Hunt of Portland attended the Alumni Day events on June 11, and Hunt and the Secretary were the class representatives at the Alumni Banquet at the Copley Plaza that evening.

If you are interested in tea and coffee, a 40-page chapter on this subject by W. H. Ukers, editor of the *Tea and Coffee Trade Journal*, and your Secretary will be found in Volume II of *The Chemistry and Technology of Food and Food Products*, published by Interscience Publishers, Inc., and edited by Dr. Morris B. Jacobs of Brooklyn Polytechnic Institute.—SAMUEL C. PRESCOTT, *Secretary*, Room 5-213, M.I.T., Cambridge 39, Mass.

• 1895 •

The Alumni Day Luncheon at Technology and the Alumni Banquet at the Copley Plaza in Boston are events of the past which record the attendance of the '95 "three guardsmen," Alden, Haffenreffer, and Yoder. Eddie Alden and your Secretary were the only '95 patrons at the luncheon while all three appeared at the banquet. Haffenreffer was allotted a seat in the "boiled-shirt" row while Alden and Yoder enjoyed the dinner in company with a congenial lot of '92, '93, and '94 men. The only fault with the menu was the omission of the after-dinner cigar. Andy Fuller paid his respects in the lobby of the hotel before the dinner. Andy looks younger and as affable as ever.

We personally regret the passing of Fred Bertram Cutter, VI, '95 and S.B. '98, on August 15, 1951. Following graduation, Fred was connected with the General Electric Company, Rossiter-MacGovern Company, sales manager of the Diehl Manufacturing Company, and about 1910 established the F. B. Cutter Company at 50 Church Street, New York City, where he operated as sales engineer and general manager until his recent retirement. While Fred had been "catalogued" with the Class of 1898, on account of his getting his S.B., his personal affiliations were always with '95, since his many devoted friends were with him for four years. He never missed a genuine class reunion

and was a most enthusiastic follower of his Class and his alma mater. When he retired from business on account of ill health, he moved to his late home in Newton Center, Mass., where he passed away. He is survived by his widow. Your Secretary was unable to attend his funeral, due to absence in the woods of Maine.

Some may remember Edward E. Allen who was in our Class for one year, 1891-1892. After leaving Technology, he followed the profession of salesman until 1905 when he joined the Southern New England Telephone Company in New Haven, Conn. We learned recently that he passed away on April 14, 1951. His one comment about Technology: "covered no benefit from Tech training, but the preparation required to enter the Institute was of great benefit."—ELLIS C. THAYER, VI, who was with our Class during 1891-1892, passed away at his home in Ocean-lake, Ore., on July 6, 1951.

Mining engineers, as a rule, frequently move from one location in a country, as well as from one country to another. Such is typical of our Harry J. Sheafe, III, who has operated in Alaska, British Columbia, and the many mining states in western United States. This habit of changing his address has not left him, since we now find him in a new location, again in California, at 152 Tuscaloosa Avenue, Atherton, Calif. Hunsdon Cary is still in Richmond, Va., at the new address, 815 Spottswood Road.

We again remind our '95 readers, the grandchildren and the great-grandchildren of the families of the Class of 1895 are eligible for scholarships at Technology, as provided for by the trust fund established for this purpose by our Class at its 50th reunion. It is hoped that we may have a survey shortly to learn where our male descendants are being educated.—LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

• 1896 •

Fred Damon and John Rockwell left 24 Garden Street, Cambridge, Friday morning, June 8th, at 10:30 A.M. for Swampscott, Mass. Stopped at M.I.T.'s "Hobby Club" and picked up two large signs, (M.I.T.'96). Thank you Mr. MacAllister. Arrived at the New Ocean House, Swampscott, registered, and planned for occupying the Beach House which had been reserved for our classmates unattended by ladies. We assigned rooms according to priority of application and arrival. Those with wives were accommodated in the main hotel. The posters and bulletin board carried pictures of previous class groups, and general notices of our informal program, as, for instance, Gibson's invitation to his "Rose Gardens," and so on, and extra space was allowed for any announcements to be made. By luncheon there were a number of early arrivals. We were seated in the main dining room for meals except for the Saturday night banquet, which was in the Standish Room (not too desirable but adequate). Before dinner Friday night, about 22 people left for the "At Home" at Charles Gibson's residence and gardens at "Forty Steps," Nahant. He was a gracious host but was quite embarrassed because

his Russian butler had sampled the liquids to be served later in the day all through the forenoon, and was down and out long before we arrived. Another disappointment was the lack of roses in bloom and a limited number of other flowering plants. However, we could well visualize what beautiful possibilities were in the offing had we arrived two weeks later. Once inside his residence, we noticed the beautiful arrangement of numerous vases of flowers (his hobby through the years). The ladies were equally impressed with the artistic arrangement, and we all noticed the mid-Victorian atmosphere of the whole setting. The dining room was filled with choice and rare china, bric-a-brac, and silver, and the table was set with appropriate tray and tea service at one end and strawberries, cakes, and sandwiches at the other. Two of the ladies presided at either end of the table while Gibson was taking care of his butler's duties. On our return to the New Ocean House, we were guided through the orchid houses of a neighbor. Here again we were ahead of the flowering season, but saw thousands of annuals in the process of being cultivated for out-of-door planting. Back from the Nahant trip we dined in the Standish Room and adjourned to the Priscilla Room, where we were greatly thrilled by a talk on Central America with illustrated views in technicolor, given by Bill Coolidge. He told of an amateurish interest acquired in the Mayan and other early civilizations of Central America and showed pictures of some of the remarkable stone structures built by the Mayan, Zapotecan, Mixtecan, and Toltec races during their stone age without the help of metal tools, beasts of burden, and the invention of the wheel. He also showed pictures illustrative of an automobile trip which he and Dorothy made last winter to Mexico. This gave glimpses along a thousand miles of Pan American Highway from Laredo to Mexico City and then south to Oaxaca City, giving an idea not only of Mexico's varied and beautiful scenery but also of the conditions under which the descendants of the early Central American Indians are today living.

Open house was maintained in a room facing the sea overlooking Nahant. Here we served whatever the individual tastes desired, and modest participation of stimulants indicated that we did not abuse the privilege. In passing, may we comment on the satisfactory service rendered by the hotel management. As was to be expected, we adjourned there after the Coolidge travelogue and talked well into the night. Weather conditions were ideal throughout the entire stay, and all expressed great satisfaction with the committee's choice of location and complimented Harry Baldwin for his valuable assistance in the management of the hotel and of the program. The Secretaries take this opportunity of making personal acknowledgement of the effectiveness with which he met our various problems, including the moving-picture personnel. Saturday morning several groups motored along the North Shore; and the spirit of reunion, quite informally, was participated in with the new arrivals under the covered piazza of our beach

quarters. Group pictures were taken on the lawn by Bill Coolidge. We adjourned to the Standish Room again for dinner, seated in groups of six. An excellent dinner was served; and Tom Drohan, with his accordian, added much satisfaction to those musically inclined, both during the dinner as well as in the afternoon gathering. Following this, a general business meeting was conducted by the Secretaries. Included was the reading of the "Memorial List," 48 of our classmates having passed on since our last reunion in 1946. Following is the list as read: 1945 — Harry G. Fisk, Henry Disston; 1946 — Allen Cameron, Jr., George Ashton, Lewis Cannon; 1947 — William Ewing, John Rowe, E. A. Baldwin, William Henry Allen, George Blakeslee; 1948 — Mark Allen, William A. Holt, Eugene de Bullet, Charles E. Locke, James Melluish, Le-Baron Russell, J. L. Wayne, Nathan Smith, Charles Tucker, W. L. Sjostrom; 1949 — Albert Cluett, Russell Porter, Malcolm McGann, James Talbot, R. F. Morgan, Reginald Norris, Benjamin Williams, H. E. Smith, William H. Colman, Clement Tower, Charles Howe, Thomas McGlynn, Albert Smyser; 1950 — Nathan Daniels, Alba Warren, F. A. Howard, Esther Stone, A. F. Woodsum, Norman Rutherford, Robert Fuller, F. R. Peabody, Edwin McClintock; 1951 — Lawrence Sager, Charles P. Lynch, Henry Cummings, Calvin Crocker, William P. Anderson, F. D. Clark, Amos Robinson. The reading of the Memorial List closed with: "Lost to sight, to memory dear, Thou ever will remain" (by Lindley). Statistics show that out of 196 graduates we now have 75 living or 38% per cent. Out of this number we had present at the Saturday night dinner 25 men and 6 women guests. Several letters were read by Helen Dodd from members unable to attend, as well as cable "Greetings" from Bakenhus in London, England. A letter from President James Killian '26 was read, extending his congratulations and regrets at being unable to attend. A sonnet, "In Retrospect," was given by our classmate, Charles Gibson, as follows: "Oh, I would have you once remember me,/Not as I am, with suffering that mars/The countenance and seared with countless scars,/But as I was, a youth of twenty three,/Fresh fashioned for the life that was to be/Full of those winged flights among the stars,/We would adventure to, ere fortune bars/The way. Good Friend, I think you must agree,/That in time's onward journey we attain/To greater heights and depths, o'er land and sea./Yet ever must those halcyon days remain,/Loving and loved for what we could not see/Was nature's gift, that life so soon can stain./So, in youth's glorious hours, remember me."

At this point came the presentation of a benevolent fund plan for aid to the unfortunate in our Class. (The balance of our class fund, as of June, 1951, is \$387.52.) Various comments and elaborations of the plan crystallized the idea that the Secretaries frame a suitable letter to be mailed to all living members of the Class. You will have received before now the explanatory letter with its objectives as well as a photostatic copy of the signatures of those attending the reunion.

Our class movies of previous years were presented before adjournment to the headquarters in the Beach House. Here, well into the night, we lived over the past with Tom leading in the musical features and the inevitable happy reminiscences of previous years. Suitable cheer and comfort were administered by Fred Damon. Sunday morning found our group dispersing and John Tilley, who has always been such an excellent host to your Secretaries at the annual '96 dinner in New York, returned to Cambridge for dinner and the afternoon at 24 Garden Street. Monday found 20 members of the Class at the Alumni Luncheon and again in the evening for the Alumni Banquet at the Copley Plaza. Those present were: Daniel M. Bates, Lewis B. Breed, Frederick W. Damon, Robert A. Davis, Mrs. Helen C. Dodd, James M. Driscoll, Hattie L. Gates, Henry G. Grush, Gaylord C. Hall, Henry R. Hedge, Perry B. Howard, Elbridge C. Jacobs, Paul W. Litchfield, Hermann C. Lythgoe, Elmer H. Robinson, John A. Rockwell, Henry K. Sears, Samuel T. Smetters, Bradley Stoughton, and Conrad H. Young. In a special room reserved for a cocktail hour, we gathered in anticipation of the annual dinner, and to reflect the events of the last few days; and we came to the unanimous conclusion that our 55th reunion had been a great success. It is needless to comment on the sympathetic reaction toward the absent members whose presence at earlier reunions left endearing memories. We have received, during the summer, letters from the New Ocean House's president and assistant manager. Clement Kennedy, President, writes as follows: "Thank you for sending me copies of the letter and the signature list that you mailed to the members of the Class of 1896. I read them over with a great deal of interest, and I felt that the plan of the Class to provide for their less fortunate classmates or their widows was a most splendid and moving tribute, both to the *esprit* of the Class, itself, and the high character and humanity of those members who conceived the plan. It was, of course, most pleasing to me to see the signature list skillfully imposed on the New Ocean House letterhead. The hotel could not possibly have a finer endorsement. The record of the attendance of so many distinguished and outstanding Americans at the New Ocean House is a great source of pride to me. Congratulations on the splendid job you did in making the reunion such a success and for your untiring and devoted efforts in behalf of the Class of 1896."

We also have heard from several of the boys, with substantial checks for our benevolent fund amounting to \$1,528, and with no withdrawals to date. — Notice has been received of the death of the wife of Charles G. Hyde on August 18. This couple celebrated their 50th wedding anniversary on May 21. The Secretaries and all class members wish to extend to our classmate deepest sympathy in his bereavement. We have other letters which we cannot include in this issue for lack of space, but we will try to cover everything in the next copy of *The Review*. — JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge, Mass. FREDERICK W.

• 1897 •

At Alumni Day there were present at the noonday luncheon Harry Worcester, Jere and Mrs. Daniell, Mr. and Mrs. George Wadleigh, Mr. and Mrs. John P. Ilsley, Luzerne Cowles and your Secretary. We were all gathered around one table, and a very pleasant hour was enjoyed. At the evening dinner at the Copley Plaza Hotel were Walter Humphreys, Jere Daniell, George Wadleigh, and your Secretary. Mrs. Daniell and Mrs. Wadleigh were in attendance at the ladies' dinner party.

When your Secretary obtained his ticket reservation at the registration desk on Alumni Day he found awaiting him a letter from Ethan H. Howard of Youngstown, N.Y., who wrote as follows: "Am a little mixed on my M.I.T. letters so am sending my replies to you as '97 class secretary. I wish I could get to the reunion but it is absolutely impossible. I would certainly love to see the bunch but cannot make it. Give my kindest regards to all my old friends and if you get a chance write me about the doings. A personal letter is so much better than a class one." Your Secretary did write Ethan a personal letter giving an account of the doings.

A letter from Proctor Dougherty says that he, Loomis and Hunnewell are the only representatives of '97 left in Washington. Hunnewell is retired from the U. S. Coast Guard and keeps busy alternating from Florida to New England. His Washington home is in the Ontario Apartments. Loomis is also retired from the National Canners Association. Arthur Jennings and Ben Howes have left Washington, the latter being in poor health. Proctor has no intention of retiring, and so far as we know has not yet been investigated by Congress, which is something.

Now for a short heart to heart talk on paper. As you know, or should know, next year, 1952, marks the 55th anniversary of our graduation. What do you wish to do, that is, how do you wish to observe it? Shall we have a reunion of several days' duration as we have had in the past at Osterville or some other place presumably in Massachusetts, or shall we simply have an all-day reunion at some country club or shore hotel near Boston? Please write personal letters to the Secretary and express your views, and do it now. One other thing — no due bills have been sent out for four years, too long a time, we admit. So ere long you will receive a bill for dues covering the past four years, and we request your prompt and favorable attention. Remember, it is up to *you* to say what we shall do in 1952.

We deeply regret that we must record the passing of two more of our classmates. Owen Herrick Gray, VI, of Salt Lake City, Utah, died on May 25 at Sarasota, Fla., aged 75 years. Mr. Gray and his wife had spent several past winters in Sarasota and they were preparing to leave for Salt Lake City when death occurred. The first few years after graduation Owen had business connections in Chicago, Ill., and Joplin, Mo. In 1902 he went to Salt Lake City and formed the partnership of Hayward

and Gray, consulting electrical engineers. In 1917 the firm became Gray and Murdoch, in which firm Owen was active until the time of his death. He was connected with the early electrical development of the intermountain area, where he designed several hydroelectrical plants. Among these projects were the Bear River and Mill Creek plants in Utah and the Thousand Springs plant in Idaho. He worked also on many of Utah's irrigation projects. He leaves his widow, one daughter and one half brother. The death of Owen marks the passing of the last survivor of three '97 men whose close friendship, formed in their freshman year, endured throughout the entire four years at the Institute. The other two members of the triumvirate were C. D. Hubbard who died on October 4, 1947, and H. Archer Clark who died on January 9, 1949. Hubbard and Clark were at our 50th anniversary reunion in Osterville in 1947.

Royal H. Hayward, VI, died at his home, 416 McKinley Avenue, Kewanee, Ill., on July 10, 1951, aged 76 years. He had been ill for about three years. A native of Ayer Junction, Mass., Royal's first position after graduating was with the General Electric Company in Chicago. In 1905, he went to Kewanee, Ill., becoming manager of the Galesburg and Kewanee Electric Railway Company. In 1919, he founded the Kewanee Manufacturing Company, a steel fabricating concern, of which he served as president until 1949 when he became chairman of the board. He leaves a widow, three sons and one daughter. Mr. Hayward was an energetic church and civic leader and prominent in "Y" work.

We are privileged to include in our class news the following editorial from a Kewanee paper which is a fitting tribute to our late classmate: "The contributions which men like Royal Hobart Hayward make to their community cannot be fully appraised even by those who knew them best and mourn them most deeply. The inspiration which unselfish service gives to others and the benefits which flow from the many enterprises which they sponsor are not to be measured. Few contributed so much to the betterment of the community in which he lived as did 'R. H.' Hayward. He was a Christian gentleman, a good citizen and a business man of the highest caliber. He was one of the fast-fading small group of industrial and business leaders who made Kewanee the thriving city of today. An industrial pioneer, as founder of the Kewanee Manufacturing Company, Mr. Hayward was a man of solid substance and ability. He created a confidence in his judgement. He was public-spirited and took time out from a busy, successful career to serve his church and many civic enterprises. He was intensely interested in the youth of Kewanee and as chairman of the board he was one of the moving forces in building operations for the present 'Y' Community building. His gracious presence in all places will be sorely missed, but none more than his sterling contributions in making this a good city of good people."

Royal will be remembered by those of us who were also present as being in attendance at our 50th anniversary reunion

at Osterville in 1947, making a special trip on for the occasion. The deepest sympathy of the members of the Class of '97 is hereby extended to Mrs. Gray and Mrs. Hayward and to their respective families in their great loss and bereavement.

Since writing the above news, we have been advised of the death of Ira G. Studley, aged 74 years, in Rochester, N.H., on May 22, 1951. He was founder, president and treasurer of the Studley Box and Lumber Company of Rochester. After leaving the Institute, he worked for a time in a box mill in Rockland, Mass. Later he became manager of a New England Cotton Yarn Company mill in Acushnet, Mass. Subsequently, after being in the lumber business in Henniker, N.H., he went to Rochester, N.H., and founded the lumber company which bears his name. He leaves his wife, one stepson, four brothers, and four sisters. The deepest sympathy of the members of the Class is extended to his wife and family in their bereavement.—JOHN A. COLLINS, JR. Secretary, 20 Quincy Street, Lawrence, Mass.

• 1898 •

All aboard for the 55th in 1953. Lester promises to make it better than the 50th! So, just write June, 1953, on your engagement calendar and then begin to make preparations to come.

President Edgerly has kindly sent us the following write-up concerning the '98 get-together on Alumni Day, June 11, 1951, etc. etc. etc. (following the procedure of our genial president): "A class meeting was held at the Algonquin Club, Boston, Mass., on June 11, 1951. President Edgerly presided. Present were Barker, Blanchard, Chapin, Cottle, Dawes, Edgerly, Gardner, High, Lansingh, Perry, Russ, Swasey, Thompson, Treat. Also present was our Honorary Member, Dr. Harrison, Dean of Science. The President especially welcomed Dr. Harrison, Lester Gardner, Van Lansingh, Arthur Blanchard. Also noted that through the courtesy of the two Boston Georges—Cottle and Treat—we were holding our class meeting in the delightful surroundings of the Algonquin Club. There have been three President's letters during the past year, in addition to the Secretary's notes in The Review. The present class membership is 166, of which the graduates in 1898 are 95, non-graduates 71. Of the 198 total graduates in 1898, those now living represent approximately 50 per cent. Ed Chapin read the comments on the numerous post cards and letters of the absent ones. This is always a high light and a much enjoyable part of our meetings. A most interesting 55th reunion in 1953 was outlined. Lester Gardner was elected as chairman and you will be hearing from him from now on. William R. Strickland of Detroit, Mich., was elected vice-president. Elliott R. Barker of Arlington, Mass., was elected as assistant secretary. A vote of thanks was given Ed Chapin for his continued good work as secretary and his constant contacts with affairs at the Institute. At the Alumni Banquet in the evening there were present: Barker, Chapin, Dawes, Edgerly, Gardner, Harrison, High, Lansingh and Perry. During the Alumni Day at the Institute a number of the class-

mates viewed the buildings and laboratories and had lunch together."

Of special interest to '98 is the following item culled from The Review, July, 1951, page 514: "Donald P. Severance, '38, Secretary and Treasurer of the M.I.T. Alumni Association, was then called to conduct Professor George R. Harrison, Dean of Science, to the speakers' platform to receive a certificate attesting his election as an honorary member of the Alumni Association. In responding to this recognition for his distinguished service, Dean Harrison pointed out that he became an Alumnus of M.I.T. the hard way — that whereas most students achieve that status after four years, it took him 21 years of hard work at M.I.T. to become an Alumnus. In accepting his certificate of membership, Dean Harrison chose to be affiliated with the Class of 1898, which had 'adopted' him as a member several years ago."

At the Victory Dinner of the M.I.T. Committee on Financing Development held in the Waldorf-Astoria, New York, on May 3, 1951, '98 was represented by George Cottle, Van R. Lansing, Dean Harrison, and the Secretary. We were immeasurably impressed by the occasion and by the speeches, two of which have been printed in full in The Review of July, 1951, and will repay reading, re-reading, and re-re-reading (to borrow the words of Professor Arlo Bates of beloved memory concerning a good book).

On the following evening George Cottle entertained Margaret and Lester Gardner, Marion and Van R. Lansing, and the Secretary at the University Club, New York. A sumptuous dinner, chosen with George's inimitable artistic taste, after which we adjourned to the new home of the Gardners at 875 West End Avenue and spent a delightful evening. Margaret and Lester, we are happy to report, were in very good health.

Dave Fenner writes: "Here I am again in Washington for World War II(a), but this time on the side of industry, rather than government. Count me in for M.I.T. in 1953. Please extend a most cordial invitation to all men of '98 who come to Washington to look me up at Hotel 2400 at 2400 16th Street, N.W., or at Room 738 in the Munsey Building, 1329 E Street, N.W." He signs the note, David C. Fenner, Washington Representative, Diamond T Motor Car Company, Chicago. We just knew that you could not stay retired, Dave. Thanks and good luck! Brewster writes that he has been spending a pleasant vacation at Key West, Fla. Did you advise the President, Bill?

President Edgerly was in town in July and we had lunch together at the Parker House, discussing '98 affairs. On leaving we glanced into the main dining room and saw George Treat at his regular table. George was in high spirits because of the record of the graduating class at Hebron Academy (see Class Notes, Review, January, 1951). Of 78 graduating, 76 are going to college. The list of colleges to which these graduates have been admitted includes all the Maine colleges and many other well-known colleges of the country; thus, Dartmouth, Yale, Harvard, Princeton, M.I.T., Michigan, Oklahoma, and Stamford.

We have received a delightful letter from Dr. Alice Tallant, concerning her work and interest in '98 and the 55th; also a long and interesting memorandum from William F. Steffens. We will reserve this material for a later issue of The Review. — George Cottle and the writer drove north recently to Montreal; i.e., George did the driving in his trusty Nash, to visit Seidensticker. On the way north, we stopped at New Boston, N.H., to inspect the Babson properties and installations. Returning south from Montreal we called on Seidensticker's daughter (M.I.T.'34) and family at Stanstead, P.Q.; then on Lillian and Al Davis in their summer home at Randolph, N.H.; and ended the day's trek at Hebron, Maine, where we were met by George Treat. The next morning we were conducted through the various buildings of the Academy by the Headmaster, Claude I. Allen, Jr.; and after lunch fared on to Kennebunkport, Maine, where we spent the week end. Interesting features of this trip will be elaborated in later issues of The Review.

There was some discussion at the class meeting in June at the Algonquin Club concerning class notes. It was suggested that there should be class notes in every issue of The Review. We are interested to learn that the notes of the past six or seven years have been followed so intently, that occasional absence is noted. Now let's look at the subject realistically. We have plenty of material in our cornucopia of news, enough to fill many columns in all the issues of The Review for the next year; but these items concern some 15 members only of the Class. Certain of these have also protested the "too often" appearance of their names in the class notes. The Directory of the Class, prepared by Lester, revised by Dan, now lists more than 150 names. In addition to these, there are wives and husbands, sons and daughters, in-laws, grandchildren, and — how about it? — perhaps great-grandchildren; and as Sir Joseph Porter remarked in *Pinafore*, "sisters and cousins and aunts," all interested in '98, and then there are friends. On an average this entourage should amount to, say, 10 per classmate: thus, 1,500 sources of news items! Consider Ye, each and every one of Ye 150, that what interests one of you will interest everyone else.— EDWARD S. CHAPIN, *Secretary*, 463 Commercial Street, Boston 13, Mass. ELLIOT R. BARKER, *Assistant Secretary*, 20 Lombard Road, Arlington 74, Mass.

• 1899 •

The Victory Dinner to Alfred Sloan '95 was a great success, as you doubtless know from having read the account in the July Review. As far as I am able to determine, I was the only member of the Class to attend. I was apparently the youngest of all those at my table, some of whom graduated back in the 80's. As I have taken off 20 pounds since last fall, it gave me a chance to find out that I could still get into my tux.

At the Alumni luncheon and dinner on June 11 the same old faithfuls attended, namely: Charles Schmitt, Hervey Skinner, Percy Witherell, Burt Rickards, and Miles S. Sherrill. The latter was walking

with a cane, but otherwise did not show any results of having been taken apart and put together again at the Massachusetts General Hospital. He is apparently indestructible. Through Miles' courtesy, your Secretary was a guest at the Alumni Council meeting at the Institute on June 2.

The July issue of The Review contained the information that Hervey Skinner had retired from the firm of Skinner and Sherman, Inc., consulting chemists. We can now add to that statement the following: "Hervey is a member of the American Chemical Society, American Society for Testing Materials, New England Water Works Association, American Water Works Association, and the Technical Association of the Pulp and Paper Industry. He is also president of the Wakefield Savings Bank, a member of the executive committee of the New England Baptist Hospital, and a trustee of the Andover-Newton Theological School."

The Alumni Secretary has provided me with a list of names of members of the Class about whom nothing has been heard since 1926. Anyone having knowledge about any one or more of the following, is requested to communicate with me: Bessie Abbot, Carlyle Barron, Fred Bunnell, James Childs, Janaro Davila, John Downes, Robert Ferguson, James Frame, Du Relle Gage, Walter Gilman, Rafael Gonzalez, Charles Hamburger, Edward Hildreth, Gardiner Hubbard, Hans Jensen, Elijah Jones, Fred Lathrop, Charles Layne, Florence Leadbetter, William McDonald, Ernest Muhlhauser, Herreros, Nebel, Edward Newkirk, Raymond Noble, Timothy O'Brien, Catherine O'Connell, Constantine Phassoularides, Albert Plimpton, Guy Reed, Gerard Riotte, Walter Roberts, George Ruppert, William Slocum, Herbert Smith, Sameul Stutchkoff, Henry Terry, Jr., Carl Werner, Jennis Wescott, Lewis Whitaker, Gertrude Wright.

We regret to record the death of Frank R. Swift at 208 Bird Avenue, Buffalo, N.Y., in December, 1945. This information was received in June, after the July issue had gone to press. Another delayed notice of the death of a classmate has just reached me — that of George E. Holmes of 144 Silver Street, Dover, N.H., on March 23, 1942. He was associated part of the time while in Technology with the Class of 1898.

Clifford M. Swan, formerly of Brookline, Mass., passed away during August at his home in Stockbridge, Mass. After graduation, he continued as an instructor and professor in physics from 1902 to 1911 and did graduate work at Harvard. Working with the late Professor Sabine, he assisted in the founding of the science of acoustical engineering and he later conducted an engineering business in acoustics from his New York office. Among his buildings are the New York City Supreme Court, San Francisco Opera House, the Rockefeller Riverside Church and the Radio City Music Hall in New York. He was a member of the Delta Upsilon Fraternity and later became its national president. He was a Mason and a member of the following clubs: University of Boston and Chicago, Bohemian of San Francisco, the Century, Engineers and Larchmont. To those who knew Clifford well at the

Institute, there was a strong bond of affection and appreciation, and it was interesting to watch him develop through life as an authority in his line with a constantly increasing circle of true and loyal friends.

New addresses: Charles B. Page, 826 Madison Street, Evanston, Ill.; Edmund T. Stewart, 513 S.E. 9th Avenue, Fort Lauderdale, Fla.; Henry P. James, Post Office Box 809, Wausau, Wis.; David H. Hayden, Siesta Key, Route 4, Box 131, Sarasota, Fla. — BURT R. RICKARDS, Secretary, 381 State Street, Albany, N.Y. MILES S. RICHMOND, Assistant Secretary, 201 Devonshire Street, Boston 10, Mass.

• 1900 •

When the last class notes were written, we were preparing for our 51st reunion. Those who did not attend missed another of those delightful affairs that the Class enjoys periodically. As a preliminary, we joined in the festivities of Alumni Day on June 11. Those attending the luncheon were: Brock, Fitch, Lawley and wife, Patch, Richardson, Russell and wife, Silverman, Charlie Smith and wife, Stearns and the Secretary — 13 in all. After greetings and salutations we secured a large table under the tent and enjoyed the splendid, informal luncheon which was followed by interesting talks by Albert Chambon, Consul General of France, Dr. Compton, and President Killian who delivered his "State of the Institute" address. The weather was cold and the wind was strong, but we were warmed by the spirit of good-fellowship and enjoyed both the exercises and the comradeship.

The banquet in the evening at the Copley Plaza was attended by seven of our Class: Fitch, Lawley, Patch, Russell, Silverman, Stearns and the Secretary. The next day, Tuesday, we adjourned to Co-tuit for our reunion at The Pines. We found everything in readiness for us and a cordial welcome by the staff. The weather was fine and remained so until the last (Thursday) morning when a light rain fell. Our entire party numbered 32, fifteen members and 17 guests. Most of these were present from Tuesday afternoon until Thursday morning. They were: George and Estelle Atwood, Bob and Mabel Blair, Zenas Briggs, Bill and Laura Clarke, Louis Crowell and daughters Gertrude and Lydia, Ed and Edith Davis, Joe and Mollie Draper, Stanley Fitch and daughter Katherine Forbes, Bill and Louise Hart, Fred and Minnie Lawley, Sumner Manley and son Jack, Chester and Blanche Richardson with guests Viola Fogg and Edward and Mildred Russell, Harry and Anne Thayer, Clarence Walworth, and Elbert and Lou Allen.

The remainder of the day, Tuesday, was spent in informal groups, renewing acquaintances and in social gossip. After dinner (roast beef or lobster newburg) we adjourned to the lovely living room at the Evergreen and gathered around the open fire for an informal class meeting and general discussion of any topic that came to mind. Reminiscences were quite in order and the comparatively small size of the group bred intimacy and informality. Wednesday was spent entirely in informal groups as the spirit moved. The shuf-

fleboard court was very popular and several exciting contests were pulled off! The Secretary refuses to testify regarding scores made, on the ground that it might tend to incriminate him. That evening we had another intimate get-together around the fireplace in the Evergreen. Next morning, although the reunion had been a short one, everyone left with the feeling, often expressed, that it had been the best reunion ever, even surpassing, if possible, our Golden Fiftieth of last year.

Several who had promised to come to the reunion were, at the last minute, prevented from doing so. We were saddened by the news of the death on May 26 of Charlie Leary's wife. They had both been with us last year and we had looked forward to seeing them again. Percy Ziegler, who had promised to bring his wife this time, was kept at home by a severe cold. George Russell and his wife, always staunch backers of our reunions, found that they could not come. On the other hand, we were greatly pleased to get acquainted with a newcomer to our reunions, Bill Clarke who came with his wife. Bill has been a backslider all these years but we believe that we have converted him to the belief that 1900 is a worth-while class and that we can count on him from now on.

As these notes are being written, we are shocked by the news of the death of Chester Richardson who died very suddenly of a heart attack on September 8. Chet has been a loyal and devoted member of the Class and has attended every reunion since 1930. A native of Pelham, N.H., he graduated from M.I.T. with us in 1900. After various professional connections, he was with the Boston Transit Commission for six years; with Fay, Spofford and Thorndike two years; with Charles T. Main 24 years and with Metcalf and Eddy the past seven years. Your Secretary represented the Class at his funeral in the Melrose Highlands Congregational Church. — ELBERT G. ALLEN, Secretary, 11 Richfield Road, West Newton 65, Mass.

• 1901 •

The Secretary wishes hereby to notify all classmates that he has moved permanently to New Hampshire and his address is now East Jaffrey, N.H. A complete report of the 50th reunion having been sent to every member of the Class, nothing further need be added here.

I regret to have to announce the death of six classmates since the last notes were written: Rosecrans Baldwin in Chicago, date unknown; Horace Johnson in Honolulu, August 20, 1950; King Knox in Baton Rouge, June 22, 1951; Robert Morton in Upper Montclair, N.J., May 19, 1951; William Rasche in Blacksburg, Va., May 9, 1951 and Charles Woodhull in Newburgh, N.Y., July 13, 1951.

I quote in part from a Baton Rouge paper regarding King Knox: "In the death of King Harding Knox the community has lost an esteemed citizen and a man of great integrity. King Knox, a quiet man and by manner reserved, was nevertheless a strong minded man. Widely read, he kept abreast of the times on current issues and made known his views on these

issues. Thoughtful and considerate of others, he was a devoted husband and friend. Born into the banking business — his father was founder of the old Bank of Baton Rouge — King Knox inevitably drifted into this field. He was also identified in the real estate business. A pride and joy was a pet project in World War II, the publishing of *Home News*, a paper with home news for many thousands of local men and women on the armed forces. He was never happier than when he had just mailed out a new issue. Through the years King Knox with Mrs. Knox had traveled, he loved the outdoors. A substantial citizen of the community and a potent civic force, King Harding Knox is not with us, but in death he will live on in the thoughts of his dear wife, his friends and also others who not close to him saw his worth and held admiration for him."

From a Virginia paper clipping of May 9 comes the following about William Rasche: "William Henry Rasche, 76, head of the department of graphics at VPI for many years until his partial retirement, died at his home here early this morning. Professor Rasche had been in bed since he was hit by a car on April 19 and suffered a broken left hip. He had just been brought home from a Roanoke hospital. He is survived by his wife and two sons. Professor Rasche was a popular figure with the alumni who in 1946 honored him for 50 years of teaching engineering and graphics. He had been a member of the faculty since 1895."

The absence of Arthur Hayden from our 50th reunion is explained by the following quotation from a Wisconsin paper. "At the commencement exercises of Ripon College, Ripon, Wis., held on June 9, Arthur Gunderson Hayden of St. Michaels was presented with an honorary degree of Doctor of Science. In his presentation address Dr. Augustus L. Barker of Ripon College said, 'It is my honor and privilege to present for the honorary degree of Doctor of Science, Mr. Arthur Gunderson Hayden, distinguished alumnus of this college, renowned for his many accomplishments in the field of structural engineering. Mr. Hayden has returned to the home of his youth where he competed in athletic sports, made local swimming records across nearby Green Lake, arranged orchestral scores for festive music in a Ripon church — in short, to the home where he developed a well-rounded personality. Following his graduation from Ripon, Mr. Hayden studied Civil Engineering at M.I.T. Working in his chosen field, he steadily advanced to the top of his profession as consulting civil engineer. He has been identified with the development of a large variety of structures including steel and concrete bridges, dams, lock-gates, aqueducts, grade separation projects. He has been chief construction engineer of the Bronx Parkway Commission as well as of the Westchester County Park Commission. He was awarded the first prize of the American Institute of Steel Construction for his design of the Mt. Pleasant Bridge in Westchester County as the most notable short span bridge built at that time. As chairman of the New York Engineers' Committee on

Student Guidance and in other similar capacities he has contributed materially in his advice to prospective engineers. In addition he has had time to write several books and numerous technical articles in his field of engineering. He has been in demand as a lecturer before colleges and technical societies. Dr. and Mrs. Hayden moved to St. Michaels from Bronxville, New York and now have a home on Long Haul Creek.

Allen McDaniel who, with his wife, hoped to come to the reunion was unable to be there. He sends me the following letter from Fairfax Meeting House Farm, Waterford, Va.: "I am delighted that so many of our Class and wives were able to attend the 50th reunion. I have enjoyed reading the report in the recent issue of *The Review*. I always enjoy reading the accounts of the activities and achievements of our classmates. As for myself, as I get older, I seem to acquire an increasing amount of interests and activities. Twelve years ago my wife and I moved out here from Washington to retire on a farm. In six months we acquired an abandoned Friends' Meeting House and converted it into a house. With neighbors we developed a community activity for its restoration and the promotion of arts and crafts, and this project has grown into a nationally-known institution. See article in September, 1950, issue of *Good Housekeeping*. During the past four years, I have co-operated with several Washington architects in supervising building projects in this area, including restoration of old houses, churches and public buildings. At present I am primarily engaged in preparing an illustrated and documented historical record of the building of the unique and beautiful Temple of Light near Chicago. I have been associated with this project for the past 30 years as consulting and supervising engineer. In public life here I have reduced my activities to serving as secretary of a county board and president of a farmers' club established in 1868. I am in better health than for years and am truly enjoying life."

I have some interesting news from the class letters which must wait until next month for lack of time.—THEODORE H. TAFT, *Secretary*, East Jaffrey, N.H. WILWARD W. Dow, *Assistant Secretary*, 287 Oakland Street, Wellesley Hills 82, Mass.

• 1902 •

Our Class had a good showing at the Alumni Day Luncheon and Alumni Banquet. Bill Bassett, Luke Collier, and Fitzgerald with their wives, Fred Hunter, John Marvin, Lew Moore, Dan Patch, Philbrick, Adrian Sawyer, and Grant Taylor gathered under the big tent for luncheon and good fellowship. We had both and greatly enjoyed a visit from Hunter's daughter, Alice '36, who was attending her own class luncheon. After an afternoon of each on his own pleasure, eight of us—Bassett, Fitzgerald, Hunter, Marvin, Moore, Patch, Sawyer, and your Secretary—again got together at the banquet and had another reunion and talk fest.

The small reunions gave us a taste of what we hope to have next June at our 50th at Coonamessett Ranch. You will

soon receive notices of the proposed plans from Dan Patch who is general chairman. He has appointed the following reunion committee chairmen: secretary, Bert Philbrick; treasurer, J. Albert Robinson; activities, Adrian Sawyer; registration and reception, Grant Taylor; transportation, Lew Moore; historic, Fred Hunter; guests, Doc Williams; and toastmaster, Bill Kellogg. As Dan says, these are "subject to change" as is the railroad timetable. Please help Dan by giving close attention to his notices.

Our classmate, Jimmie Smith, died last May and Roger Greeley furnished the following sketch of his professional activities: "Our classmate, James Woodbury Smith, I, worked for a while for the Boston and Maine Railroad 'over the arch' at the Causeway Street Station. Later he inspected public service properties for the New England Insurance Bureau, and from that experience entered an investment house as appraiser of properties in which the house was interested. Later in the same office, Bodell and Company, he became a salesman of public service securities. His next step was to associate himself with the Paine Webber Company of Boston as investment counselor, a post which he occupied until his death this spring. Jim married Cleora R. Russell, and is survived by three of their four children: Priscilla, Rebecca (Mrs. Alan Adams of Lexington, Mass.), and James, Jr., also of Lexington. A younger son, William A., was lost in the second World War. Jim was a member of the Lexington Dramatic Club and appeared in many of their plays. He was also a loyal member of the First Parish (Unitarian) Church and was widely loved and respected in his community."

Word has been received through a clipping from the New York Times of the death, on June 4, of Colonel Henry L. Green, who, at the time of his death, was retired and living in Hillandale, Md. He retired first in 1939 but was called back and had charge of the erection of many Army camps in the southeast. He had earlier been engaged in building construction in World War I. He retired for the second time in 1943. His service in the Army had been varied as quartermaster at Corregidor, departmental and constructing quartermaster for four years in Panama, and, just after the first World War, as chief of the American Grave Registration Service, purchasing the land, building the cemeteries, and so on.—BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston 16, Mass.

• 1903 •

Six members of the Class were registered for Alumni Day last June. Gould, C. F. Green, Joyce, King and the Secretaries, together with Mrs. Eustis, Mrs. King, Mrs. Joyce and Mrs. Gould attended one or more of the events. It was pleasant to get together, and we wished that more of the Class, especially those who live within the limits of suburban Boston, would attend. A letter has been sent out to all classes who have not been accustomed to publishing notes in each of the nine issues of *The Review* suggesting that the Secretaries might wish to submit

class notes every month instead of on alternate months. So far as we have material, we shall endeavor to send in notes every month, hereafter. We can only do it, however, if you supply us with notes of interest to the Class. Also, Mr. Kane has called our attention to the fact that '03 has no class agent. He thinks we should have one, especially with our 50th anniversary approaching. Some retired member of the Class, who would like to take on this fairly easy chore, is asked to get in touch with the Secretaries.

We have the sad duty of reporting four deaths, notices of which have come to us since our last issue. Charles P. Waterman, I, died in Hartford, Conn., on April 11, 1949. He was not personally known to the Secretaries, and no further information is available. We wish we might know more about him. Robert F. Jackson, IV, died in Brookline, Mass., in March, 1950. Bob attended several reunions of the Class in recent years, and was always a welcome member. He never married, and in later years was not in good health. Frank D. Hayden, I, died in Seattle, Wash., on April 3, 1951. He, with Crowell and Cushman, went to Pittsburgh, Pa., after graduation to work for the Pennsylvania Railroad. He stayed there for some time, then went west, and farther west, until he finally landed in the Philippines, where he was engaged in road construction for a long period. When he came back to the States, he stayed in the far northwest. Joseph Murray, II, died on August 16, 1951, in Newton, Mass. He had been active in Newton politics for many years, serving as an alderman, chairman of the public works commission, and as water commissioner since 1934.

Information about class members is always more than welcome by your Secretaries. When it becomes our sad duty to write obituaries, then is the time we wish some of you had sent us material. The above notes, such as they are, are the result of personal information, and the daily newspapers.—FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, Box 103, South Wellfleet, Mass.

• 1904 •

The *Review* is not published in August, September, and October and the notes for the July number must be submitted in May, so the present edition contains all items which have come to the attention of your substitute secretaries since June 1.

First comes an account of Alumni Day. Not as many '04 men appeared as we had hoped for, but the official registration showed Fellows, Hayward, Hiller, Lang, Munster, Russell, Thurlow, and W. T. Wilson. Of these, all but Russell attended the banquet in the evening. Several attended the dedication exercises of Burton House, which is the name given to the former Riverside Apartments recently acquired by the Institute and converted into an attractive dormitory. It was named in honor of Dean Burton who taught some of us surveying. A brief address was made by his son, Harold H. Burton, now a Justice of the United States Supreme Court.

Later in June, Herb Kalmus was given an honorary doctor of engineering degree at the commencement exercises of Northeastern University. The citation was as follows: "Chemical engineer, educator, and inventor. . . . Your inquiring mind, your industry, and your organizing and directing genius have led to important discoveries which have advanced medical knowledge, refined industrial processes, and benefited humanity. Your leadership in research has brought to motion pictures the advantages of natural color, giving new delight to millions of your fellow citizens. Firmly grounded in New England traditions, you have established on the West Coast a bit of the Yankee way of life." Herb's name later appeared in the gossip column of a Boston paper as follows: "Other recent parties include the lavish Hawaiian dinner party given by Dr. and Mrs. Herbert T. Kalmus at their summer home in honor of their daughter, Cammie King, who celebrated her birthday. One hundred guests marveled at the affair which was held under an enormous tent on the Kalmus estate."

The most extensive news item about a classmate was the story of the retirement of George Curtis from the Massachusetts State Highway Department. The column in the *Berkshire Eagle*, Pittsfield, Mass., was very interesting and gives various incidents in the 40 years George spent on this job and the changes in operating procedures which took place during that time. It is stated that he supervised the building of nearly 1,000 miles of highways and several hundred bridges. The closing paragraph of the above article was as follows: "Mr. Curtis got to know the streams and ponds and roads all right — perhaps better, in fact, than any other resident of the county. But even more valuable was the thoroughness with which he got to know and earn the deep loyalty of the city and town officials in the 40 communities with which the district office must do daily business. For most persons, getting along with 100-odd selectmen would seem an impossible assignment; for Mr. Curtis who was raised on a small farm in Hanover and attended town meetings before he acquired long trousers — it is not only easy but enjoyable. The best evidence of this is the fact that his testimonial dinner earlier this month was attended by more Berkshire selectmen than had ever before assembled under one roof." The following statement, made at the dinner mentioned, gives further evidence of the affection felt for George in western Massachusetts: "The presence here tonight of his many friends, from all walks of life, is in itself a high tribute to our honored guest, George A. Curtis. Representatives of Town, City, County, State, and National Governmental Agencies here present, together with those from the many Civic Organizations with which he has been connected, bespeak the high regard they have for Mr. Curtis. This occasion makes two milestones in his life; namely, the completion of 45 years of service in the Massachusetts Department of Public Works on April 23, 1951, and the attaining of his 70th birthday on June 17, 1951. We feel that no tribute would be complete without our

expression of deep gratitude for the gentlemanly manner, the cheery comradeship and the helpful understanding that has permeated the many years of his stewardship in District One. The characteristics we feel are indeed synonymous with the name of George Alden Curtis." We have no news regarding George's future plans, but it is a safe bet that he will not remain idle.

Another retirement to report is that of Dwight Fellows from the Massachusetts State Planning Board. Dwight told us at the Alumni Day festivities that he planned an automobile trip to the West Coast visiting numerous friends along the way. — Louis Bouscaren was among those at the head table at the big Victory Dinner in New York celebrating the successful conclusion of the Development Fund campaign. Louis was an important factor in this achievement, having organized the Chicago district. From time to time the name of Bob Sosman appears in connection with ceramics, in which field he has become an authority. He has given several important addresses on the subject and his technical articles always command respect. — A summer afternoon call at the "Whitney Homestead," Stow, Mass., found Henry Stevens in a cheerful frame of mind, and since there was no ball game to require his attention he accepted an invitation for a brief automobile ride. It was nice to see Steve looking so well, and our various reminiscences were very pleasant. He still declines to resume his secretarial duties however.

The Review office suggests that it will be glad to print class notes every month instead of on alternate months. This would have the advantage of keeping the items fresher but it is hard work getting enough to send once in two months. Give us more news and we will go on a monthly basis.

A note from Guy Palmer gives a new address at 22 Chestnut Avenue, Clarendon Hills, Ill. He writes: "You will note I have a new address, a village of 3,000 about 22 miles from Chicago. We moved in on June 15, and have been so busy getting settled. Our new house, which we built, is small and all on one floor. So much easier to care for and only one-half mile from our grandchildren. Mrs. Palmer and I are well and look forward to the 50th."

Henry Kramer has retired from Stone and Webster, sold his old homestead in Roslindale, Mass., and bought a place in South Duxbury, Mass., where he diligently cultivates a garden of which he is very proud. Doc Moore has moved his office from Boston to Vernon Court, Newton, Mass. This does not mean he has given up medicine, for he is just as active as ever. The following excerpts are from a nice letter from Mark Magnuson whose present address is 515 South Lake Avenue, Lantana, Fla.: "I am now a Florida cracker with a summer change to be a hillbilly in the rocky lake district of Ontario. I am like a duck out of water with no hobbies, no technical experience, therefore no background to do anything particularly interesting since my whole life, except two years in mining, has been in commodity trading which leads to

nothing unless immediately in contact with moving markets. However, being in the castor oil business has taken me to Bombay, Kashmire, Delhi, Madras, Shanghai, Sumatra, Manchuria, Peking, and Kobe. Other trips covered Mexico and South America with a three-year interval advising the U. S. Government on castor oil raising in South America." A change in management of this business brought about Maggie's retirement at 65, so now he says he hasn't anything to do except golfing, fishing, and fall hunting in the Middle West or Canada. (Sounds like a tough life doesn't it?) His note concludes as follows: "Well, hope some of my 1904 friends will show up at my address when I am there. Except for a trip to South America, August 20 to November 1, I expect to be around for a long time. My folks died at 90 and with this ease I will live to be 100."

Finally we come to that part of the class notes which we always like to be brief, namely, the list of those who have passed away. There are four this time: Alfred W. Burnham, Stephen E. Kieffer, Philip A. Leavitt, and William D. Lynch. The only one on which we have additional information is Burnham whose death was reported in the Waltham, Mass., *News-Tribune*. He had retired a year ago after 25 years as an executive of the Sharon Optical Company and made his home at Geneva, N. Y. He leaves a widow and two daughters, Alice M. Burnham and Mrs. Elbert Comstock, all of Geneva. They have the sincere sympathy of the Class. — EUGENE H. RUSSELL, JR., 82 Devonshire Street, Boston 9, Mass. CARLE R. HAYWARD, Room 8-109, M.I.T., Cambridge 39, Mass.

• 1906 •

It is the Secretary's opinion the news item of greatest interest at this time is a change in the class organization. Since graduation we have had but two class officers; namely, secretary and assistant secretary. Most of the classes now have a class president in addition to the secretary or secretaries. In view of the approach of our 50th reunion and the work entailed in preparation for that important occasion the Secretary has felt for some time that 1906 should follow the example of the other classes and have a more complete class organization. After the class banquet at our 45th reunion a class meeting was held and the following officers were elected to serve through our 50th reunion: President. Harold V. Coes; Vice president, E. Sherman Chase; Secretary and Treasurer, J. W. Kidder; Assistant Secretary, E. B. Rowe. To this list of class officers the name of Henry E. Darling, Class Agent, should be added. In view of the reactivation of the Alumni Fund, classmates will hear from him presently.

The new President and Vice-President are well known to classmates as they have both been much interested in class affairs and faithful attendants at class functions. Harold Coes retired as vice-president of Ford, Bacon and Davis, consulting engineers in New York and then served with the E.C.A. in Paris. More recently he has been with the American Management Association. He is a former president of the A.S.M.E. He resides in Upper Montclair,

N.J. Sherman Chase is one of the partners in the consulting engineering firm of Metcalf and Eddy, Boston, Mass. He resides in Newton, Mass.

The Secretary attended the Victory Dinner at the Waldorf in New York on May 3. Nine other classmates were present. They were George Burpee, Harold Coes, Stewart Coey and Joe Santry of New York Alumni; and O. R. Adams, Rochester, N.Y.; Mike Gibbons, Dayton, Ohio; Allyn Taylor, Reading, Pa.; Jim Wick, Youngstown, Ohio, and Malcolm Wight of Hartford. This was a very representative group of '06 men and the Class should be grateful to them for their work on the Development Fund Campaign.

Class attendance at Alumni Day, June 11, reflected the fact that it marked the 45th anniversary of our graduation. Seventeen members of the Class registered for the day. They were W. G. Abbott, Jr., E. B. Bartlett, David Bloom, Sherman Chase, Stewart Coey, Floyd Fuller, Michael Gibbons, George Henderson, Thomas Hinckley, Chester Hoefer, Burton Kendall, Andrew Kerr, William Lambert, A. B. Sherman, Lemuel D. Smith and the Secretaries. In the morning some members attended the dedication of the Burton House. It will be recalled that Dean Burton was made an honorary member of our Class as he began his duties as dean the beginning of our freshman year and his first four years in that office coincided with our years at the Institute. The attendance at the luncheon was about 20, composed of all but three of the men registered above plus the wives of Messrs. Bloom, Chase, Fuller, Hinckley, Hoefer and Kendall. Fifteen of the registrants attended the banquet and Mrs. Chase, Mrs. Hinckley, Mrs. Hoefer, and Mrs. Kidder attended the ladies' banquet. Classmates at the banquet were much impressed by the gifts of the 25- and 50-year classes which made us realize what would be expected of us in 1956.

Alumni Day marked an auspicious beginning for our 45th reunion which continued for the two days following at Snow Inn at Harwichport on the Cape. The Secretary and his wife arrived early Tuesday morning and found that Jack and Mrs. Norton had arrived the day before after driving from Tryon, N.C. Other arrivals Tuesday and Wednesday brought the total attendance to 43; 16 couples and 11 stags. The 14 couples besides the two before mentioned were the Chases, Coes, Coeys, Farwells, Fullers, Guernseys, Hinckleys, Kendalls, Lewenbergs, Patches, Rowes, Shermans and Taylors. The "stags" were W. G. Abbott, Ball, E. B. Bartlett, Blackwell, Dean, Gibbons, Henderson, Kerr, Newton, L. D. Smith and Wight. Mike Gibbons, George Henderson and Doc Smith were attending a class reunion for the first time and were doubly welcome. On the other hand, we missed Henry Ginsburg and Ray Philbrick, two loyal classmates who had passed on since our 40th. Daisy and Frank Benham were prevented from attending on account of the former's illness; we are glad to report now that she has fully recovered. Sherman Chase entertained the crowd Tuesday evening by exhibiting Kodachromes, mostly of a trip to Europe. The

beautiful pictures and accompanying talk were enjoyed by all. Wednesday was divided among sightseeing, sailing, and the class golf championship. This was won by Allyn Taylor for the fourth consecutive time. Later at the banquet it was voted to award him permanent possession of the trophy (a bronze golfer just finishing a beautiful swing, mounted on a suitably inscribed pedestal). When the award was made one classmate had the temerity to suggest that, when the new trophy is purchased, one with a less virile action be selected as it would be more in keeping with the age of the contestants. Jack Norton and George Guernsey were tied for the second gross prize—1st net, Herbert Ball; 2d net, Burton Kendall. Wednesday afternoon some of the hardy classmates went in swimming; others lounged or played Canasta. On Wednesday evening the Inn management put on a predinner cocktail party in the Boat House which provided an auspicious beginning to the class dinner, which was, as always, the high light of the reunion. Following a delicious dinner, which was attended by 42 of the 43 members and guests at the reunion (Mike Gibbons left early on account of a business engagement), the various prizes were awarded including the award for coming the longest distance. For this a double award was made as Doc Smith and Ed Bartlett both came from Milwaukee. Letters and greetings were read from absent members and then the ladies adjourned and a business meeting was held resulting in the new class organization as described in the beginning of these notes.

We would be remiss if we failed to mention that a great contributing factor to the success of the reunion was the hospitality and co-operation of our hosts at Snow Inn. We found the Inn such a desirable place for a reunion that the newly elected class officers have already engaged it for our 50th reunion.

Over 20 years ago when The Review was changed from a quarterly to a monthly, the custom was established of having the even-numbered classes furnish notes one month and the odd, the next, although some secretaries agreed to insert notes in every one of the nine issues. So many classes now follow this "nine-issue" plan that the editor has recently written to the secretaries that notices calling for class notes will be sent out each month and any notes submitted by secretaries will be welcome. The Secretary hereby goes on record that he will operate on the nine-issue basis. This is an early demonstration of the advantages of having a class president; under the old organization I had no supervisor in such matters. With the new arrangement I expect I will hear from President Coes, if I don't keep alive on this job. Reunion notices always bring letters which provide material for class notes. Our 45th was no exception, but as these notes are already quite lengthy, I will reserve some of the items for the December Review.

Word has been received that Samuel A. Greeley, XI, has been made an honorary member of the American Society of Civil Engineers and has been awarded the Frank P. Brown medal of the Franklin Institute "for his leadership in the pro-

fession of Sanitary Engineering and his many contributions to knowledge in that field which have particularly improved the welfare of urban population." Both honors were bestowed upon Mr. Greeley in October. Greeley is a member of the firm of Greeley and Hansen, Chicago, Ill.

The Secretary regrets to report the death of three classmates as follows: Michael J. Ahern died on June 5, 1951, at St. Elizabeth's Hospital, aged 74. The Secretary has had occasion to mention him from time to time in this column. He took special courses in geology while at the Institute. He was a Jesuit Priest who had served as professor of chemistry and geology at Canisius College at Buffalo, N.Y., and later was president of that college. He also taught at Holy Cross College. At the time of his death, and for the past 20 years he was connected with Weston College at Weston, Mass. Father Ahern gained popularity through his activities as director of the Catholic Question Box and the Catholic Truth Period radio programs. He served on the air from 1929 until last year and was known as the "Radio Priest" to thousands of New Englanders. He was a Fellow of the American Association for the Advancement of Science, of the American Geographical Society and of the American Academy of Arts and Sciences, and a member of the American Chemical Society, Boston Geographical Society and the Seismological Society of America. He is survived by a brother, Maurice Ahern, who is public relations director at Fordham University.

Walter B. Clifford, II, died in Waltham, Mass., on September 10 at the age of 66. He was born in Fitchburg and prepared for the Institute at the Fitchburg High School. He at one time was with Stone and Webster but later established the Clifford Manufacturing Company, which had plants at Waltham and South Boston, and eventually became its president. He had been active as a consulting engineer up to the time of his final illness. He is survived by his wife, Mrs. Bess Swenson Clifford, and a daughter.

Harvey B. Orcutt, I, died on April 6, 1951. He was born in Florence, Mass., and attended the schools in that city. In 1912, he married Rosalie Salathe of Phoenixville, Pa., where he resided at the time of his death. He was a bridge engineer with the Phoenix Bridge Company. In this connection, previous to our recent reunion the Secretary received a letter from Terrell Bartlett which was written by Mrs. Orcutt, acknowledging a Christmas card which Terrell had sent to Orcutt the previous Christmas and advising Terrell of Orcutt's death. From the letter, we learned that Harvey was chief estimator for the Phoenix Bridge Company and an outstanding citizen. His death was the result of a long malignant illness and he showed wonderful courage and spirit throughout. He is survived by his widow and an adopted son who reside in Phoenixville, also a sister, Mrs. Gertrude M. Hibbard of West Hartford, Conn., and a brother, Frederic A. Orcutt of Florence. — JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

The following men of our Class were present at the events of M.I.T. Alumni Day on June 11: Clinton Barker, George Crane, Ralph Hudson, Alexander Macomber, Henry Martin, Ed Moreland, Bryant Nichols, Don Robbins, and Phil Walker. We all had a splendid time enjoying the fellowship of each other and of men of other classes and participating in the splendidly planned events of the afternoon at the Institute grounds and of the evening at Copley Plaza Hotel in Boston.

Without doubt you read on page 492 of the July Review of the sudden death of Ed Moreland. You can well imagine the shock that those of us who were present on Alumni Day received when we read in the paper on the morning of June 17 of his death, when only six days previously we had sat around the table at the Boston hotel with him. He was apparently in the best of spirits and health on that occasion. Space does not permit the recording of the tremendous large number of varied activities in which Ed participated in the fields of engineering, education, governmental service, and community and home life. I am adding to the account of his career, as given in the July Review, a few facts which will interest you who are reading these notes. During World War I he served as captain and later as major of engineers in the American Expeditionary Forces, and after the Armistice he was appointed head of a mission to determine the German indemnity for Belgium. He was a Fellow of the American Institute of Electrical Engineers and of the American Academy of Arts and Sciences and held membership in the American Society of Civil Engineers, the Boston Society of Civil Engineers, the American Society of Mechanical Engineers, and the Society for the Promotion of Engineering Education. His clubs included the Engineers in Boston and New York, the University Club, the Wellesley (Mass.) Country Club, and the Phi Gamma Delta Club of New York. He was a member of Tau Beta Pi, honorary engineering fraternity, and Sigma Xi, honorary scientific research fraternity. One of his special interests was the General Theological Library in Boston, a lending library for clergymen. In May of 1950 he was elected a trustee of Wellesley College, and in June of 1950 he received the honorary degree of Doctor of Engineering from Johns Hopkins University. In November of 1950 he was appointed a member of the then newly created National Science Foundation by President Truman. As soon as I learned of Ed's death, I arranged with Phil Walker to send a sympathy bouquet on behalf of our Class to Mrs. Moreland and under date of July 3 received a note from Ed's secretary written on behalf of Mrs. Moreland thanking us for this expression of our sympathy. Under date of July 16 I received from Mrs. Moreland the following note: "I did receive the very beautiful flowers before your kind letter reached me, with Mr. Macomber's. Mr. Walker's, and your name on the card. It was a tribute to my husband and a solace to me. I have wanted to acknowledge every letter

at once on receipt of it but you will understand that that is an impossible task. It has meant a great deal to me to hear from you and Edward's 1907 friends and others from M.I.T. He cherished his friends and enjoyed them immensely at every meeting. On Alumni Day he greeted hundreds so happily and felt the especial warmth of their response that day. I hope you were able to attend the memorial service as you write you expected to do. Mr. Blakesley's prayer seemed to me very beautiful and particularly appropriate to Edward's character. I knew him best of all after 37 happy years of marriage and know full well the praise that has been spoken of him is deserved. With deep feelings of gratitude for your sympathy, I am, Sincerely yours, Francina Moreland." Alexander Macomber, Phil Walker, and I, as officers of our Class, attended the memorial service for Ed which was held in the Wellesley Hills (Mass.) Congregational Church on June 18. We saw Ralph Hudson at that service, and there may have been others of our Class present whom we did not see, as the large church was almost completely filled with people. Ed was a most loyal and interested member of our Class, always attending reunions and class dinners unless he was prevented by duties which were of the utmost importance to him. Internationally known as an engineer, sought after in the counsels of M.I.T., and in demand by our government for posts of distinction, he was nevertheless extremely democratic and cordial in all of his relationships with all kinds of people.

On July 7, 1951, John S. Nicholl died after a long illness. John attended Princeton University before coming to the Institute and was a graduate at M.I.T. in the Course in Mechanical Engineering. He was in Japan for three years as a sales engineer and then returned to Boston, and in 1913 he established and became president and treasurer of Riverside Boiler Works, Inc., in Cambridge, Mass., a concern which became very successful in the manufacture chiefly of small hot water boilers. The concern dissolved in 1938, and for a few years he was a sales representative of various articles in the field of mechanical equipment. At one time I knew him intimately and upon his death wrote a note of sympathy on behalf of our Class as well as for myself to his widow. Under date of July 12 I received from Mrs. Nicholl, whose address is 15 Leighton Road, Wellesley, Mass., the following note: "My three sons and I deeply appreciate your letter. Yes, John has been through a long illness of 10 years, and his going is a blessed relief to him. In years gone by I remember John knowing you well. My sons and friends are a great comfort to me, and I have my work here in the Wellesley Hills Library, which is most interesting. You might be interested to know of my sons. J. Seymour, Jr. (Princeton '39), is married and has two children, and he teaches in a private school in Lenox, Mass. Dr. Willard (Harvard and Tufts Medical) is married and lives in Dallas, Texas. Grier (Wesleyan '51) is entering Union Theological Seminary in New York in the fall. Your letter was very comforting."

A clipping from the Maplewood-South Orange (N.J.) Record of July 6, contained a long story about our classmate, Allan Cullimore. From this article I quote: "The American Society for Engineering Education presented the Lamme Gold Medal for outstanding achievement in engineering education to Dr. Allan R. Cullimore, president emeritus of Newark College of Engineering, at its annual banquet July 5, 1951, at Michigan State College. The Lamme Award is the highest national honor in the field of engineering education, and is bestowed annually by the Society upon a distinguished engineering educator for 'excellence in teaching and contributions to the art of teaching; contributions to research and technical literature; achievements which contribute to the advancement of the profession; and engineering administration.' Dr. Cullimore, who resides at 158 Garfield Place and has been a South Orange resident for the last twenty-five years, is the first educator in the New York-New Jersey metropolitan area to receive the Lamme Award in engineering. . . . A native of Jacksonville, Ill., Dr. Cullimore was graduated from M.I.T. in 1907. He founded the College of Industrial Science at the University of Toledo and was for a time dean of engineering at the University of Delaware. In World War I he won distinction and the rank of major in the Sanitary Corps, U. S. Army, for organization of rehabilitation programs in veterans' hospitals in Washington and from Denver to the Pacific Coast. In Newark Dr. Cullimore has during the last thirty-two years developed the art of engineering education to a high level embracing not only a sound technological training to meet the industrial needs of this area, but a program of humanistic-social studies designed to develop in the young engineer himself an appreciation of broader values in human relations. This point of view as reflected in the philosophy and practices of the Newark College of Engineering has raised the school from an institution of twenty-five students in 1919, when Dr. Cullimore first came to Newark, to one with a student body of 2,800, which now ranks as one of the outstanding engineering colleges in America. One of the principles which he has emphasized is the engineer's responsibility as a citizen. For ten years he served as chairman of the Committee on the Engineer's Civic Responsibility of the American Society of Mechanical Engineers — a post for which he still serves as an adviser — and in collaboration with the late Senator Roy V. Wright, he was responsible for much dissemination of this idea to students and young engineers. A permanent lecture series was established at Newark College of Engineering on the subject. Dr. Cullimore is himself recognized as a leader in civic affairs in this area, serving on the Citizens' Advisory Committee to the Central Planning Board of Newark, the New Jersey State Department of Defense, and the Regional Loyalty Board of the Second U. S. Civil Service Region. In 1947 he was a delegate from Essex County to the New Jersey State Constitutional Convention. During World War II he served as regional adviser for the War

Manpower Commission, and director of Civilian Defense for the Newark Area. Dr. Cullimore was first vice president of American Society for Engineering Education in 1943-44, a member of the council 1940-43, and has served the Society on various committees. He has been active for a number of years in the Boy Scouts of America, being former president of the Robert Treat Council in Newark and currently a member-at-large of the National Council, serving on the National Personnel Division Committee and National Committee on Retirement and Group Insurance. In 1937 he received the Silver Beaver Award and in 1947 the Silver Antelope Award, both for distinguished service to boyhood. He holds the honorary degrees of doctor of science from the University of Newark, and doctor of engineering from Newark College of Engineering, Stevens Institute of Technology, and Rutgers University. He is first honorary member of the Professional Engineers' Society of Hudson County; member of Tau Beta Pi, Beta Theta Pi, Phi Kappa Phi, Omicron Delta Kappa, Engineers' Club of New York, and Down Town Club of Newark. Since his retirement as president of Newark College of Engineering in 1949, Dr. Cullimore has been devoting a considerable part of his time to a project that had long been in his mind — the correlation on industrial relations and personnel relations work at the College into an expanded Department of Management and Personnel, which he guides as chairman. Dr. Cullimore is also a member of the board of managers of The Howard Savings Institution; board of trustees of the Kessler Institute, President Truman's Committee for the Rehabilitation of Physically Handicapped, United States Department of Labor Committee for the Utilization of Impaired Workers in Industry, and Regional Loyalty Board of the United States Civil Service Commission."

In my notes in the July, 1951, Review I mentioned the new address for A. T. Kolatshevsky as being 48 Sussex Place, Slough, Bucks, England. As the result of a letter that I wrote to him on May 27, I received a note from him which reads in part as follows: "I am now retired and settled in England. My wife and I have migrated to this country in order to spend the remaining days of our terrestrial existence in the company of our son and his family. My son works in Slough. We came over here in October, 1950, and stayed in London until such time as a suitable house could be found. We like it very much in England. Such a change after 25 years in Belgium! Everything is different: language, currency, customs, weights and measures, and even the voltage of our alternating currency supply." — Hudson B. Hastings, who for many years has been professor of economics at Yale University, has the new home address of 135 Millbrook Road, Hamden 14, Conn. On June 13 I received a note from Bill Coffin, whose address is Powder Point, Duxbury, Mass., regretting his inability to have attended the alumni dinner on June 11 and adding the following comment: "About 10 days ago Floyd Naramore arrived in Boston from a Mediterranean cruise to Spain, Italy, Greece, Egypt, and the Near East.

He was on his way home to Seattle, Wash. We had a short reunion with Paul Cummings and Stanley Wires at the latter's home in Wellesley Hills." We have as a new address for Frederic Menner, 257 Picacho Lane, Santa Barbara, Calif. In the Boston newspapers of July 8, I noticed a brief article to the effect that the deputy administrator of the Petroleum Administration for Defense had invited about 30 natural gas distributors to an emergency conference on the following day to discuss shortages and controls in connection with the natural gas industry. Among the men invited to this conference was Alexander Macomber.

Once each year a group of outstanding American architects is honored by election to Fellowship in the American Institute of Architects. This is one of the highest honors the professional society can confer. Such an award was conferred on May 10, at the annual banquet of the Institute during its convention in Chicago. One of the men who was thus honored was Earl H. Reed of our Class. The following statement regarding Earl's accomplishments was released last spring by the American Institute of Architects: "Earl H. Reed has been advanced to Fellowship for achievement in design and service to the Institute. While actively engaged in studying and preserving the best in mid-western pioneer architecture, Reed has recognized the validity of contemporary design and planning, and has utilized new techniques for the solution of present day problems. His own work in design and that of many of his former students at Armour Institute are demonstrations of his ability and teaching methods. As president of the Chicago Chapter of the American Institute of Architects during the depression years, he coordinated efforts and succeeded in finding employment for many architects and draftsmen in the Chicago area. Long interested in city planning, Reed has served as a consultant in this field, directing the Woodlawn Rehabilitation Project and preparing the Canal port Redevelopment report. Born in Norwood Park, Illinois, in 1884, Reed graduated from the Chicago Manual Training School in 1902. He received an S.B. from ... Technology in 1907, and studied at the Ecole Nationale des Beaux Arts in Paris. He worked with Dwight H. Perkins, Daniel H. Burnham, Edward H. Bennett, and Martin Roche in Chicago, and Chaussmiche, Huillard, and Guibert in Paris. During the first war he was in charge of design at Camp Grant for Edward H. Bennett. His present firm is Earl H. Reed, George B. Eich, Associates, 343 South Dearborn Street, Chicago. Examples of his work in design include the remodeling of the Municipal Building in Evanston in 1946; nursery building for infant patients at Lincoln, 1949, which has been cited for excellence by the director of the Illinois Department of Public Welfare and plans of which have been exhibited at American Hospital Association meetings; restoration of Supreme Court, third State House, Vandalia, 1950; Willard Memorial Library, 1938, and Roycemore School library, 1936, Evanston; and the Grable, Rothschild, Jacobs, and Ryerson residences. He founded and con-

ducted the Atelier Bennett in 1908, which was the first Beaux Arts group in Chicago. Starting as an instructor in 1916, he became head of the Department of Architecture and Professor of Design at Armour Institute where he taught until 1936. During the second world war he took a certificate in industrial engineering at Lewis Institute, and taught in the Civil Engineering Department at Northwestern University. Prior to his appointment in 1933 as District Officer for the Historical American Building Survey, Reed had spent six years on an independent survey of midwest pioneer architecture, and has lectured widely and written extensively on this subject. In recognition of this work he was appointed to membership on the National Advisory Committee, Historic American Building Survey in 1949. He has belonged to the American Institute of Architects since 1922 and served as president of the Chicago Chapter in 1934-35. He promoted the unification of the Chapter and the Illinois Society of Architects and has served on municipal art, education, membership, and registration and education committees, for the Chapter, and has been its delegate at many national conventions. Reed was professional advisor to the first Chicago Tribune Small Homes competition and the Chicago War Memorial competition. In 1934 he was appointed state architectural advisor to the Home Owners' Loan Corporation. He has been a member of the architect's committee of the Art Institute's Burnham Library of Architecture since 1916, and assisted in remodeling the library and selecting its collections. He has made a study of European and other libraries to illustrate the necessity of a new approach to library architecture. In support of community planning, he helped organize the North Side Planning Council and Triangle Association and was co-author of a widely distributed rehabilitation pamphlet 'Planning for a Better Community.' Reed has contributed numerous articles and reviews on architectural and planning subjects to professional magazines and supervised the publication of three volumes of selected plates of the Historical American Building Survey."

In closing these notes, I call your attention to two events about which you have heard through letters which you have recently received from me. One of these is the renewal of activities in connection with the M.I.T. Alumni Fund. As '07 is the 45-year class this year, let us make a real effort to contribute generously to the Fund. The second event which I ask you to note on your calendars and to plan to attend is the 45-year reunion of our Class, which will take place at Oyster Harbors Club, Osterville, Mass., from the afternoon of Friday, June 20, to Sunday, June 22, 1952.

— BRYANT NICHOLS, *Secretary*, 23 Leeland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

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This number of The Review marks the beginning of another year so far as class activities and news of its members are concerned. Your officers send greetings to everyone and look forward to their co-

operation in sending in news items about themselves and their families, as they have done in the past.

On Alumni Day, June 11, the following members of the Class were present: George Bowers, I, Howard Congdon, I, Chet Dawes, VI, Tom Desmond, I, Brad Dewey, X, Derick Hartshorn, II, Francis Loud, VI, Ken May, VI, Art (I) and Betty Shaw, Laurence Shaw, V, Dwight Sleeper, VI, Henry Spencer, II, George (II) and Marcia Wallis, Lyman Whitney, II, and Johnny Willard, II. Most everyone attended the luncheon in Du Pont Court as well as the dinner at the Copley Plaza. As we advised in the July number, Mollie, XI, had planned to be present but was obliged to go to Greece again in connection with an electrification project under construction. However, his greetings were extended to those present, as he requested.

Also, as reported in the July number, your Review Secretary and Muriel spent the larger part of the summer in Europe, the special occasion being a meeting of the International Electrotechnical Commission at Estoril, Portugal, to which your Review Secretary was a delegate from the United States. We combined pleasure with business and visited such places as Paris, the chateaux of the Loire, Biarritz, Lisbon, Barcelona, Carcassonne, the French Riviera, Switzerland, and England. On sailing out of Southampton we had an excellent view of the oil refinery plant at Fawley which our president, Carl, V, was instrumental in building. We saw recently that the plant was being dedicated officially and that, in view of the oil situation in Iran, it is now a life saver for Great Britain.

We all know that Tom and Alice Desmond have assembled a large collection of trees and shrubs and other flora native to the United States and elsewhere on their large estate at Newburgh, N.Y. In the 1951 annual report of the Massachusetts Horticultural Society there is an announcement, accompanied by Tom's picture, that he had been awarded the Society's Gold Medal. The citation states that he is "a keen amateur horticulturist" and "has a record of distinguished public service. . . . In addition to assembling an extensive collection of native American trees, shrubs and woody plants, Senator Desmond has also taken a vital interest in exotic plants. His enthusiastic and intelligent approach in planting a great arboretum is hereby recognized by the Massachusetts Horticultural Society." Tom is also the author of "The Vicious Scandal of Funeral Fees," appearing in the August number of *Coronet*. — George Wallis, II, President of Creamery Package Company and our assistant secretary in the Chicago area, was able to arrange his business affairs so that he could attend the Alumni Day activities. We were more than glad that he could be present. Also, after our return from Europe and while at the Isle of Springs, Maine, we happened to arrive at our float just as the day cruiser *Flying Saucer*, owned by a fellow member of the Boothbay Harbor Yacht Club, pulled alongside. We were happy to learn that he was bringing George's daughter, Mrs. Sanford, and her husband. She re-

ported that George and Marcia were then at their cottage on Lake Winnipesaukee.

Again, with regret we report the passing of three more classmates: Charlie Johnson, IV, passed away on December 5, 1950, the notice having just reached us. For some time he had suffered a heart ailment and we judge that this caused his death. There has been considerable news in our notes concerning Charlie, the first appearing in February, 1945, in a letter to Tom Desmond. Charlie's wife was librarian of the Putnam Valley (New York) Free Library, which is near Tom's home at Newburgh, and to which Mrs. Desmond has presented a number of her children's books. On his wife's death in 1940, Charlie was made librarian and the name of the library changed to the Rhea Kimberley Johnson Library in her honor. In September, 1942, he went with the Army Engineers, so resigned as librarian but was made a trustee. In 1944 he joined the U.S. Naval Air Station at Brunswick, Maine. At the conclusion of the war, the air station buildings were taken over by the University of Maine in 1946 and Charlie was asked to remain and teach mechanical drawing. In 1949 he retired to Putnam Valley. During this period he visited the Review Secretary at the Isle of Springs, about 34 miles from Brunswick. We have already referred in an earlier number of The Review to the fact that his two sisters purchased the Pennell house, called the Pearl House, on Orr's Island not far from Brunswick, the scene of Harriet Beecher Stowe's novel, *The Pearl of Orr's Island*. A son, Kimberly, survives. — Frank Remick, XIII, passed away at New Castle, N.H., July 13, of a heart ailment. He was born in Kittery, Maine, in 1885, moved to Methuen, Mass., and while attending the Institute worked as a shipwright's helper. After leaving the Institute, he joined the Cramp Shipbuilding Company in Philadelphia, in 1911 went to the Portsmouth Navy Yard, and in 1914 transferred to the Boston Naval Shipyard. In 1923 he returned to the Portsmouth Navy Yard where he remained until his death. Within a few days he would have completed 40 years of government service. He was past president of the Portsmouth Naval Shipyard Chapter, National Association of Naval Technical Supervisors, and a member of the Naval Civilian Administrators' Association, American Society of Naval Engineers, Naval Lodge AF and AM of Kittery, DeWitt Clinton Commandery, K.T., Aleppo Temple, Mystic Shrine of Boston. Mrs. Remick, who survives him, received a personal letter from Dan A. Kimball, Secretary of the Navy, expressing his regret and stating: "Mr. Remick's detailed knowledge of ship work, his cooperative attitude, and his proficiency in the performance of his duties were distinct contributions to the efficient operation of the Navy. The enviable record of submarine construction established by the Portsmouth Naval Shipyard would have been impossible without the untiring efforts of employees like Mr. Remick. You have every reason to be proud of your late husband's excellent record of Federal service and as Secretary of the Navy, I extend to you my sincere sympathy in the passing of such a loyal and faithful employee of the

Navy." An equally complimentary letter was received from Captain E. C. Craig, U.S.N., Commander of the Portsmouth Shipyard.

Stephen L. Burgher, VI, of Wellesley Hills, Mass., died September 2 at the local hospital. He moved from Newton to Winthrop, about 1896, where he attended the public schools and was graduated from Mechanic Arts High School in 1905, from which he entered the Institute. He lived in Winthrop until 1937 when he moved to Wellesley Hills. After graduation from M.I.T. he was an insurance inspector until he went with the New England Fire Insurance Rating Association in 1916, where he had been manager of the Improved Risk Department for many years. He had been a member of the National Fire Protection Association since 1912. During the past years his chief hobbies were golf and bowling. While a resident of Winthrop he was interested in civic affairs there and was also active in golfing and bowling, as well as sailing in earlier years. He was a member of the Maugus Club, the Framingham Country Club, and a charter member of the Society of Fire Protection Engineers. The Review Secretary knew Steve very well, for we were not only in the same course together, but performed many laboratory experiments as partners. Since leaving the Institute I would meet Steve occasionally and talk over old times at the Institute. He leaves his wife, Mrs. Blanche M. (Tuthill) Burgher; a daughter, Mrs. Sheila B. Dearborn of Needham; a brother, Charles Burgher of New Britain, Conn.; and a granddaughter, Deborah Jane Dearborn. — PAUL M. WISWALL, *Secretary*, 20216 Briarcliff Road, Detroit 21, Mich. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. Assistant Secretaries: MAURICE R. SCHARFF, 366 Madison Avenue, New York 17, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

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Another enjoyable Alumni Day on June 11 was attended by the usual number of members of the Class. Those attending the luncheon and banquet were Jack Babcock, Bob Burnett, Dud Clapp, Henry Hale, Bill O'Hearn, Dean Peabody, Myrton Turnbull and Cliff Waldo. Bob Burnett and Myrton Turnbull brought their wives to the luncheon and all present were delighted to have met them again.

These notes were started just prior to taking off on a vacation and just as I had finished I received a telephone call advising me of the passing of Dean Peabody. It was indeed a shock. The following is from the Boston *Herald* of August 9: "Professor Peabody, pioneer in the testing and use of concrete in buildings, died Tuesday night at his summer home in Hubbardston. Born in Reading, he was graduated from . . . Technology in 1910 and joined the faculty in the same year, remaining until 1949. He began teaching at Harvard in 1946 as a visiting lecturer on architectural construction and became a professor there in 1947. He was author of a standard

textbook on 'Design of Reinforced Concrete Structures' and was awarded the designer's prize of the Boston Society of Civil Engineers in 1940. An enthusiastic mountaineer, he was former president of the Appalachian Mountain Club and was active in the American Alpine Club. During World War II, he tested climbing ropes and other equipment for the army. He was a member of the American Society of Civil Engineers, American Society of Testing Materials, American Association for the Advancement of Science, and Boston Society of Civil Engineers."

Van Bien writes the following upon the return of a sailing cruise with Gordon Holbrook: "In the first place, I experienced pleasure at meeting my classmates last June far beyond my fondest expectations. There is something heartwarming in seeing and talking with them again. The same old fellows, yet not the same. There was a dignity about them, some almost imposing. Some had gone far in their careers, others lagged a bit, but one could not tell that from their conduct. There was perhaps less class distinction at the reunion than at Technology, though with more reason for it. I am proud of our Course XIII, Naval Architecture. There were 11 graduated. Of those, two are dead: E. J. W. Ragsdale, and M. S. Chapin. I saw each of them on several occasions after leaving the Institute, though neither recently. There were therefore nine remaining. Of these, five were at the reunion. If I had my slide rule handy, I would tell you the percentage. I can't do division or multiplication any more without it. Anyway, it was better than 50 per cent; and I think that is pretty good for men over 60. It seems strange, the place college friends take in our lives. We meet as strangers and four years later are scattered to the corners of the earth. Yet friendships formed during these brief years seem somehow to be more stable and lasting than any others formed before or after. Why this should be is hard to say. Maybe it is because there is a leveling process during our association. Perhaps rather, it is, that we are all brought up to a higher level of intelligence where we stay. We breathe a somewhat rarified atmosphere, and at the same time have four years of common experiences and backgrounds which cement us into a sort of brotherhood, almost as if we were brothers. Pleasant thought anyway. Somehow, I feel that these last reunions are more important, more interesting, more satisfying than the earlier ones. Don't ask me why but I certainly enjoyed this one more than any of the others. I can hardly wait for the next big one, the 50th. It is too much to hope for as good a turn-out. Nature will of necessity take its toll, and who will they be? All those I met looked pretty well, yet nature is inexorable and will exact her quota. But let's turn to pleasanter thoughts.

"While at the reunion I met Gordon Holbrook, also of XIII. Unlike me, he had stayed in shipwork all his life and was at the top of the heap at the Federal Ship Yard at Kearny, N.J. He was his same old unassuming self. I have

strayed far from shipwork having gone into building and from that to architecture, but I have always retained my interest in boats. However, not 'til recent years have I had time or money for a boat. Several years ago, I partly bought and partly built a small one, but as with most, I soon found it too small and about three years ago bought the starboard half of a larger one (the galley and food were on that side). A friend bought the port half, so between us we have a whole boat. While at the reunion, I sort of dared Brook to take a cruise with me. To my surprise he took me up. He, used to big steel ships, hundreds of feet long, was willing to venture forth on my little 34-footer, ocean going auxiliary ketch though she is.

"Having accommodations for four, I arranged for two youngsters (one of them the co-owner) to accompany us. We wanted the youngsters in case the old men should not wish to do the hard work. I don't want you to get the idea that we couldn't do it. However, I find gray hair inspires respect — why not cash in on it. Well, anyway, I met Brook at the train in Washington last October 20 and after a short visit at my home we went down to our cottage on the lower Potomac where we keep the boat. It was midnight of Friday when we had all the gear on board. Brook, I think, wanted to bed down for an early start next morning, but the boys quite obviously wanted to start at once. Brook, like a good sport, said, O.K. So, the two old men went below and to bed while the boys took the boat out of the slip and into the river. Brook was asleep in a few minutes. There were ways I could tell.

"There was a moderate breeze, enough to make power unnecessary, so the boys held forth on deck while we were below. The river here is infested with fish net stakes except in the channel. They are in great rows sometimes half of a mile, or more. At this time of the season there were no nets but the stakes were there. One of the boys was stationed forward as a lookout, the other aft at the helm. I could hear them calling back and forth. The lookout would yell back: 'Stakes on the port bow, hard over to starboard.' Then the grinding of the quadrant as the skipper swung the wheel hard over. With the change of course, the wind was on the other tack so the 'Tross heeled to the other side, necessitating a change in our positions. I could hear Brook as he turned slowly over. No sooner had we gotten set, than, from the lookout: 'Stakes to starboard, come about.' Again the 'Tross heeled. Again and again this happened for half or three quarters of an hour. Finally, I found a position on my face, so I was well braced for either tack. But with each change in course poor Brook would turn slowly over, but he never wakened. When at last the boys reached the channel (the river here is six to eight miles wide) they were able to turn east on a better sailing course without the annoyance of stakes. We then settled down to much more comfortable sailing and I was soon dead to the world, as Brook had been all along. About 3:00 A.M. I awoke. The 'Tross seemed much more steady, the rise and fall with the seas had ceased. No

longer the gurgling and rippling of the water along the hull as we moved along. Only the gentle lap, lap of little wavelets on the side. I heard the skipper coming down the companionway ladder. Seeing that I was awake, he whispered: 'We are at anchor in Lower Wochodoc, behind the bar.' I had not heard the anchor go over, nor any of the other noises which accompany lowering and furling sails. Before long, both the boys disappeared into the forward cabin and it was not long before all was at peace on board, and all were asleep.

"Next morning we were up with the sun. After looking about a bit, I slipped back into my bunk. In a few minutes, Brook woke up and we chatted a while. After a bit the boys were up and I started breakfast. We have a nice little galley (kitchen to you landlubbers), with a two-burner alcohol stove, refrigerator, sink, and so on, so we can have as good meals as the ability of the cook will permit.

"Soon, we were off visiting other creeks in this area. Our second night was set for the 'banquet.' We were at anchor in a quiet little cove that looked more like a lake in Maine than a part of the lower Potomac. The water was still and mirrored a beautiful sunset with all colors of the spectrum. This evening, as I say, was to be the 'banquet.' Even before we anchored, I was below peeling potatoes and getting things ready. By the time the boys and Brook had things all shipshape and Bristol fashion topsides, I had the table set, with plates, napkins and silver — even candles. Somehow, food tastes better that way. We started off with chilled grapefruit, followed by sirloin steak, mashed (whipped) potatoes (and when I say whipped I mean just that), corn on the cob and coffee with cream. I even offered them Liederkrantz cheese and more coffee as a dessert, but they apparently were pretty well filled up (I hope not fed up) and refused. Fortunate; for when I checked I found I had left it at home.

"That night in Cornish Cove, for that was the name of our anchorage, was surely designed for sleeping. It was cool, and quiet, a beautiful moon, no flies or mosquitoes; indeed, it is rare that we are troubled with them. After dishes were washed, in which all hands took part, we had a couple of cuba libres (all except Brook) and a delightful evening of chatting in our cozy little cabin. All good things, unfortunately, must come to an end. Brook was scheduled for the three o'clock from Washington Sunday afternoon. So, we were up again with the sun on our way back to Wescataway (our cottage) on Nomoni Creek, and thence back to our regular daily tasks."

The following is from the *Boston Herald*: "Mr. and Mrs. Daniel W. Gibbs of East Auburn, Me., announce the engagement of their daughter, Miss Patricia Marion Gibbs to Mr. William George Fowler, son of Mrs. Elgie Van Duyne Fowler of Yalaha, Fla." — Carroll Benton stopped in to the office to see me on a Saturday morning this summer; unfortunately, it was one of those Saturdays I was letting the office take care of itself. Stuart Sneddon called me early one Sunday morning this summer from Lake Placid where his

family was taking their vacation. — HERBERT S. CLEVERDON, Secretary, 120 Tremont Street, Boston 8, Mass.

• 1911 •

Vas you dere, Charlie? If not, you missed the event of the century, according to all of us who were fortunate enough to be present at our 40-year reunion at Snow Inn, Harwich Port, Cape Cod, June 8 through 10. Although we had an even dozen fewer attenders than the record-breaking 117 people who attended our 30th at the Mayflower Inn, Plymouth (Manomet), in 1941, the 57 classmates, 41 wives, five children and two guests present this year were all convinced that this year's reunion committee, ably headed by Aleck Yereance, effectively lined up and carried out a highly successful and enjoyable affair, at an ideal location.

All of you have had the post-reunion issue of *Thelevener*, featuring Jim Duffy's priceless log and the group picture and many candid shots, but we do want to list here the 18 folks who attended one of our reunions for the first time: John and Margaret Alter of Lawrence, Mass.; G. Arthur and Hazel Brown of Brooklyn, N.Y.; Burgess and Florence Darrow and their daughter, Frances, from Akron, Ohio; Henry Dolliver, Belmont, Mass.; Louis and Margaret Harrigan, Beverly, Mass.; Phil and Isabel Kerr, Arlington, Va.; Henry Martin'07, who got his degree with us and now is in Washington, D.C.; Leonard Mills from Holyoke, Mass.; Bob and Elizabeth Schurig from Schenectady, N.Y.; and Henry and Dorothy Wood from Providence, R.I. It was fine having you all with us and we're glad to hear you plan now to be "regulars." Our "100% Club" now has nine members: Obie Clark, Marshall and Helen Comstock, Dennie Denison, Jack Herlihy, Carl Richmond, O. W. Stewart, and Harry and Grace Tisdale. Although George Cummings, VI, was forced, because of serious illness, to miss his first reunion, we are pleased to be able to announce that his recovery during the summer has been splendid.

At Alumni Day in Cambridge, June 11th, we had "two elevens" at the Institute for the luncheon: Bill Coburn, I and XI; Luis deFlorez, II; Dennie, VI; Henry Dolliver, I; Norman Duffett, X, and Winona; Jim Duffy, VI, and his son, Jim, Jr., a freshman at M.I.T. this year; Tom Haines, II; Jack Herlihy, II, and Mabel; Roger Loud, VI, and his son, Alden'49; Bob Morse, VI; Dick Ranger, VIII; Nat Seeley, II, and Louise; O. W. Stewart, I, and Gertrude; Emmons Whitcomb, X; Al Wilson, I; and Aleck Yereance, I. At the annual Alumni Banquet at the Copley Plaza that evening we were joined by Syd Alling, VI; Fred Harrington, I, and Stan Hartshorn, X, giving us a total of 25 attendees.

As most of you well know, your Secretary is seldom at a loss for words; but he definitely was just that at our Saturday evening class dinner at Snow Inn, when Don Stevens, II, our class president, handed him a touching letter of appreciation of 40 years' service as class secretary plus a certified check for \$2,025! You know, classmates, I still can't find adequate words to let you know my real feel-

ings. I only hope that I may continue for many years to serve the Class in a way that continues to hold us together in a bond of fellowship and loyalty to M.I.T. as it has in the past. Subsequent remembrances from classmates have increased the "O. B. Denison Fund" to more than \$2,300, a wonderful tribute.

On August 31, our illustrious classmate, General George C. Kenney, I, reached the mandatory retirement age, and the Air Force bade good-by to him at Bolling Field in Washington with the men of 12 squadrons and the Air Staff, behind General Hoyt S. Vandenberg, Chief of Staff, standing at attention while General Kenney marched forward to the roll of drums and blare of trumpets to receive a second oak leaf cluster to the Distinguished Service Medal for his leadership in teaching the doctrines of air power at the Air Force's highest school in the concluding phase of his more than 34 years of service. Then General Vandenberg awarded him the Legion of Merit for his service as senior United States representative to the United Nations Military Staff Committee. George entered the aviation section of the Signal Corps in 1917 as a flying cadet and received his primary instructions under the colorful Bert Acosta. As a fighter pilot in 1918, he downed two enemy aircraft and earned the Distinguished Service Cross and the Silver Star. During the years between the wars, George pursued his advocacy of air power with characteristic vigor and, between his assignments to service schools, he was constantly seeking to make the airplane more effective, both as a weapon and a vehicle. During World War II he served as commander, successively, of the Allied Air Forces, the United States Fifth Air Force, and the Far East Air Forces during the Pacific war. Then from 1946 to 1948 he headed the Strategic Air Command, the long-range bombing force entrusted with the mission of carrying the atomic bomb. Since 1948 he has been commandant of the Air University at Maxwell Air Base, Montgomery, Ala. After the ceremony on August 31, which included a review of troops and the flight overhead of a squadron of 15 F-84 fighters, George told reporters he had nothing to say "just yet" about the military problems confronting the nation. "But," he added, "I'll have a lot to say later on." He said he didn't know where he was going or what he was going to do, but he made it clear he did not intend to remain idle. "If you hear of me sitting on a front porch somewhere," he said, "call the nearest undertaker and tell him to stock up with embalming fluid, because he's going to need it." He added that he had received several offers from private firms but had not made up his mind if he would accept any of them, nor would he say whether he intended adding a third book to the two he already has had published: *General Kenney Reports* and *The MacArthur I Knew*. Surely we of 1911 will agree wholeheartedly in the following message that President Don Stevens sent George: "You have done a great work for your nation and I would not want the opportunity to go by without saying many, many thanks in behalf of the Class of 1911 for a job so well done!" As

the New York *Herald-Tribune* so aptly expressed it editorially: "The retirement of General George C. Kenney removes from active service still another of the men who built and led the Army Air Force through its triumphs in the second world war, and who endowed the United States Air Force of today with its tradition, its spirit, its strategic and tactical doctrines and its high sense of mission. Stamped in the school of 'Billy' Mitchell and 'Hap' Arnold, they were a band of brothers — brave, brash, forceful and inventive, with a dedicated belief in air power and an iron resolve to prove its strength in the battles of the world's greatest war. . . . It was Kenney who after the war became one of the most effective advocates of a strong and independent Air Force, and did much to shape the present structure of air power. . . . For the Air Force as Kenney and his colleagues shaped it can never become a static institution; the capacity for growth and change is the essence of its greatness."

We learned with regret, during the course of reunion publicity mailings and replies, of the death of two classmates, both of whom died in late 1949. On September 25, 1949, Bill Shepherd, VI, died at his home, 3803 Van Ness Street, N.W., Washington, D.C., and is survived by his wife, L. Editha Shepherd, and three daughters, Mary Ellen Shepherd, Mrs. W. K. Johnson, and Mrs. H. P. Thomas, Jr. Interment was at Williamson, N.Y., his boyhood home. He prepared for M.I.T. at Williamson High School and the University of Rochester, doing graduate work with us. — Alexander Nimick, X, a graduate of Yale in the class of 1909, who did graduate work with us, died at Sewickley, Pa., November 20, 1949. Associated with the Vanadium Alloy Steel Company for more than 35 years, he was works manager of the Colonial Steel Division at the time of his death. He was also president of the Beaver Valley Manufacturers' Association and a member of the board of directors of the Beaver County Division of the National Economy League. He is survived by his wife, Martha Levering Nimick, and three sons, Alexander Nimick, Jr., of Summit, N.J., Webb L. Nimick of Detroit, and Howard T. Nimick, a student at Yale. — A letter from his daughter, received in June, advised of the death on April 4, of Ewazo Suzuki, X, who spent two years with us after graduation from Central College, Fayette, Mo., and was quite active at M.I.T. He was a member of both the chemical and mechanical engineering societies and, during his senior year, was vice-president of the Cosmopolitan Club. He was a life member of the M.I.T. Alumni Association and for many years operated Taiyo Soda Company, Ltd., at Tarumi, Hyogo-ken, Japan. His daughter mentioned that her father had said earlier this year that he wished he could get back to a class reunion, but he died in early April, a victim of cancer. — Jim Greenan, III, a native of Taunton, who also spent two years of graduate study with us, after receiving an A.B. at Boston University in 1909, died at his home in Reno, Nev., July 23, where for years he had been president and general manager of Greenan and Company, Inc.

With us, he was a member of Theta Delta Chi Fraternity, the K.S Society, the Mining Engineering Society and the Catholic Club. He was also a life member of the M.I.T. Alumni Association. We deeply regret the passing of these four classmates.

Our deep sympathy also goes out to Pete Gaillard, VI, and Mrs. Gaillard, of Washington, and to Mrs. Louis Russ of Dorchester, Mass., the former Esther Barker, sister of the late Charlie Barker, VI, in their hours of sorrow. David St. Pierre Gaillard, Jr., 28, died at his parents' home on June 9, after an illness of three years. A veteran of World War II, in the Navy, young Gaillard had spent much time working with the Committee on Undersea Warfare of the National Research Council. Mrs. Russ lost her husband on June 8, and then a month and a day later her brother, Richard Barker, who had lived with Mr. and Mrs. Russ, also died.

Norman DeForest, III, who has an extensive fruitgrowing business in Maitland, Fla., had a narrow escape when he was badly hurt in a motor accident on July 17 on the way to his packing house, suffering from concussion, a fractured jaw, collarbone and arm, as well as several ribs. He hovered between life and death for quite some time, but his wife, Elsa, replied to a letter in late August, saying: "Norman was so glad to hear from you and wishes me to say how much he appreciated your thought of him. He is improving now and may be able to return to work in a week or two. His fortitude and courage, plus excellent doctors, have carried him through these past weeks, but then an old 'Elevener' should come through, don't you think? We were sorry to miss the reunion."

— We were very sorry that Carl and Etta Ell could not be with us at Snow Inn for the reunion, but the dates directly conflicted with the Northeastern University commencement. In his presidential address to the graduates of 1951, Carl declared: "The diploma is a document of little value in itself. But it does indicate you have a disciplined mind that is equipped to do good. We have today frontiers that sparkle with opportunity far beyond the dreams of our forefathers. All that has gone before — education, training and experience — is but a prologue to broader education, deeper experience and greater achievement yet to come."

Complexities involved in distributing a limited production of critical materials to meet the needs of rearmament and essential civilian requirements were discussed in mid-July at a meeting of the construction mobilization subcommittee of the Chamber of Commerce of the United States. Headed by Ralph Walker, IV, past president of the American Institute of Architects, the subcommittee is a branch of the Chamber's Construction-Civic Development Committee. According to the best available government estimates, material shortages will be most acute during the last quarter of 1951 and the first quarter of 1952. During this six-month period the demand for structural steel, on a free-market basis, will be about twice the apparent supply.

Had a fine letter July 1st from George Cumings, VI, who, on April 20, shortly after his retirement from New England

Telephone and Telegraph Company, was stricken with a heart attack: "I am looking forward to the next edition of *Thelevene*. To say that I was disappointed at not being able to attend would be putting it mildly. For the past year I have been looking forward to it, knowing that I would be on the retired list, that my time would be my own and my worries few. When they carted me off to the hospital, for six weeks the doctor said, I still had hopes of making it. (I had no idea how sick I was.) As time went I began to think that I might get someone to drive me down just for Saturday, so I could at least see some of the gang and say 'Hello.' But no soap. . . . I am now improving, but it looks like quiet times for me for some time to come. However, I'm lucky to be here and am now shooting for our 45th and 50th reunions. I hope I make them." We hope so too, George.

Also a nice letter from Tom O'Hearn, I, Lowell, Mass., in mid-June: "Rather late with this response to reunion publicity, but due to difficulty in getting back to normal after a severe illness of several years ago I am not as active as I was before, but it's a good stretch from '11 to '51 and we are fortunate to see the 40-year period through. May God be good to you, Dennie, and grant you many years of good health and good fortune to continue the splendid work you have done." Don Frazier, II, and his wife, Jess, who drove from Richmond, Va., for the reunion are among a number who feel we should have reunions at least once between each regular five-year event. How do you feel? Jess wrote: "Now that we have found the ideal spot — Snow Inn — how about at least an informal week end get-together there in '53 or '54, as a warm-up for our 45th in June, 1956? One thousand six hundred miles was a short trip for such a perfect time and Don and I both think five years too long to wait for another one." In response to a request as to how Sara's arm was, it was fine to be able to report that her right arm seems now stronger than ever after an unfortunate break she sustained on Mother's Day, as earlier reported.

Charlie Ashley, III, who for the past 15 years has been resident vice-president of Maryland Casualty Company, 107 William Street, New York City, retired July 2d, at his own request, because of ill health. He has been in the insurance business since leaving M.I.T., starting with his father — perennial mayor for several terms at New Bedford — in the firm of Charles S. Ashley and Sons before joining Maryland Casualty as resident vice-president at St. Louis. Charlie's new address is R.F.D. 2, New Bedford, Mass.

In response to notes of sympathy from me in behalf of the Class, nice letters are at hand from Colin Maclaurin, son of our dear friend, Mrs. Richard C. Maclaurin, who died this spring, and Dugald C. Jackson, Jr., '21, whose father, Professor D. C. Jackson, Head of Course VI, Electrical Engineering, also died this spring. A contribution of \$11 to the Alice Maclaurin Scholarship Fund was made for the Class of 1911. — Johnny Scoville, IV, sent in a clipping from the New York *World-Telegram* of June 20, entitled, "City's Pipes Foam, Taxpayers Froth," with a picture

captioned: "Ever hear of foam, foam on the range? This is it — at the Tallman's Island sewage plant in Queens. Detergents, it seems, are giving the place those white open spaces." The story goes on to say: "If this display of foam is a heady sight to the aesthetic-minded, it is a pain in the purse to the taxpayer. Additional air to stimulate the bacteria is costing New Yorkers a frothy \$150,000 yearly. Richard H. Gould, I, director of the city's sewage disposal division, and his cohorts are still searching for a way to eliminate the suds. Although expensive, they contain grease which blows on nearby shrubs and makes sidewalks dangerously slick. And when the sun bakes the grease. . . . Whew!! Ironically enough, Mr. Gould asserted, detergents don't have to foam in order to cut grease. Smiling, he added: "The manufacturers add the bubbling ingredient to give sales appeal."

Erv Young, I, unable to attend the reunion due to his wife's serious illness, wrote that he is now with the M. H. Treadwell Engineering Company, 140 Cedar Street, New York City. A. T. Cushing, I, writes from Kansas City: "You may be interested to know that on the work of rehabilitation of an ordnance plant near Kansas City, I have received a nice promotion and am now department engineer in charge of planning and progress control." Nice going, CUSH! Ted Meyer, II is now with the Michigan Wheel Company, 235 Market Street, Grand Rapids, Mich.

Just as we have continually been up among the leaders in the Alumni Fund during its first 10 years, so did 1911 make a fine showing in the recent successful \$20,000,000 campaign for funds for M.I.T., and it is a real pleasure to record here a "baker's dozen" of '11 men who were reported by the Development Program Office as "CFD solicitors above par": Walter Allen, XIII, Peabody, Mass.; G. Arthur Brown, X, Brooklyn, N.Y.; George Cowee, III, Boston; Dennie Denison, VI, Gardner, Mass.; Minot Dennett, II, Detroit, Mich.; Henry Dolliver, I, Boston; Bill Hodgman, II, Taunton, Mass.; Ed Kruckemeyer, IV, Cincinnati, Ohio; Morell Mackenzie, II; Bill Orchard, I, Maplewood, N.J.; Don Stevens, II, Ridgewood, N.J.; Bun Wilson, XIV, Pittsburgh, Pa.; and Aleck Yereance, I, Boston. Now all of us must once again get behind the Alumni Fund. The 11th annual fund is now under way. Get behind it promptly! No fewer than 19 '11 men, who had not previously subscribed in any of the 10 years preceding the Alumni Fund, did support the Development Program, a tribute to its fine appeal. A Happy Thanksgiving to you all. — ORVILLE B. DENISON, Secretary, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, Assistant Secretary, 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

In opening up the new year a plea is again made for news of yourselves or any other 1912 men you may meet. Do make it a point to drop your Secretaries a line now and then, as even a post card will be welcome.

The following men registered for Alumni Day, June 11. Andrew F. Allen,

Harvey S. Benson, James A. Cook, Albion R. Davis, Jerome C. Hunsaker, Charles C. Jones, H. Eric Kebbon, Harold G. Manning, Wallace J. Murray, Erwin H. Schell, Frederick J. Shepard, Jr., John D. Shore, Cyrus F. Springall. In the evening, the following sat together at the 1912 table: Harvey Benson, Cy Springall, Albion Davis, Harold Manning, John Shore, C. C. Jones, Erwin Schell, J. C. Hutchinson, Fritz Shepard.

Pierre Drewsen now in Northampton is disturbed over the addition of fluorine compounds to the city water supply. His letter of June 14 to the *Daily Hampshire Gazette*, Northampton, Mass., gives good reasons and states that as this practice is still in the experimental stage, care should be taken to protect the public health. — J. H. Pratt writes that we can depend on their being on hand for our 40th reunion next June. Jay states that although he has been on a semi-retired basis for about a year and a half, he has just been drafted into the Army as a small business specialist for the Chicago Ordnance District. He reports it is decidedly interesting.

Paul Jeffers has just taken a so called refresher course at the Institute in photo elasticity. Unfortunately, he was so busy that he neglected to give me a ring; but as he expects to be back later, this will be forgiven. Paul is president of the California Board of Registration for Civil and Professional Engineers, and he will be back in Boston to attend a meeting of the National Board.

Eric Kebbon, Class President, reminds us of the impending 40th reunion as follows: "Time marches on and at an accelerated pace. We will have departed from the Rogers Building 40 years ago next June, although I believe the memories of our four years at M.I.T. are still clear and pleasant for the most part. I am leading up to our 1952 class reunion which we should make a memorable occasion, and your class officers are bestirring themselves to make it so. Will you therefore give us the benefit of your suggestions as to the most desirable place to hold it, number of days to give it, and the kind of program to adopt for it. It is not too early to start our planning, and we will soon appoint a Class Reunion Committee. In the meantime, will you send your ideas to me at 1105 Park Avenue, New York 28, or our Secretary, F. J. Shepard, Jr., who will keep everyone informed of our progress through the class notes in *The Review*. Also, I know you will give 100 per cent support to the Alumni Fund when it is reactivated this fall now that the Development Program has been successfully terminated with subscriptions exceeding 20 million dollars — exclusive of Mr. Sloan's handsome gift of \$5,250,000."

C. Bolmer Vaughan writes: "I note you ask for suggestions as to the 40th reunion in the May Review. For our money, you could not do better than Osterville with no planned events; just a chance to get together and talk it over as in '47. We certainly hope to make it anyway but trust we shall have the pleasure of seeing you both before then."

The New York *Herald-Tribune* carried the following item from Long Branch, N.J., dated January 20, 1950: "William

H. Baxter, sixty, chief of the operations division and senior member of the engineering staff of Chemical Construction Company, Empire State Building, New York, died Friday in Monmouth Memorial Hospital of injuries suffered in a fall five days ago. He lived at Westborn Apartments, Bronxville, N.Y. He was born at Bangor, Me., and was graduated from ... Technology. In 1924 he was a founder of the Nitrogen Engineering Company, which was later merged with the Chemical Construction Corporation, a subsidiary of American Cyanamid Corporation. He installed many nitrogen fixation plants in Europe and Asia and built three of the largest synthetic ammonia projects for the United States Army during World War II. He recently returned from a trip to survey ammonia production facilities in India and Ceylon. Surviving are his wife, Mrs. Charlotte Heyman Baxter; a son, William H. Baxter, Jr., and two daughters, Mrs. Margaret B. Arias and Mrs. Helen B. Ennis.

John D. Shore writes that he has been associated with E. D. Sherman and Company, travel agents in Boston, for a number of years. — Jim Cook says: "I look forward with pleasure to attending the 40th class anniversary next year and hope that nothing will prevent the Cooks and the Whites, with many classmates, from being present. I sincerely hope we will have good headquarters, good attendance and good weather. Time has proved that I am no photographer since I have not done much work along that line. My interest continues high and I assure myself from time to time that a new start is just around the corner. It is more than possible that I am kidding myself. I have, however, laid in a stock of photographic chemicals, purchased an Eastman Master Model projector for 35-millimeter Kodachrome slides together with two cartons of 120 each flash bulbs PH5 and PH5B. This indicates that the patient's temperature is still high even if the disease is making no progress."

Please send along your ideas about the coming reunion, as requested by Eric Kebbon, and news of your plans and activities. — FREDERICK J. SHEPARD, JR., Secretary, 31 Chestnut Street, Boston 8, Mass. LESTER M. WHITE, Assistant Secretary, 4520 Lewiston Road, Niagara Falls, N.Y.

• 1913 •

The Alumni Dinner in June was attended by: A. L. Brown, E. H. Cameron, B. L. Cushing, W. N. Eichorn, W. N. Flanders, John J. Harty, E. L. Macdonald, F. D. Murdock, W. P. Muther, W. A. Ready, G. M. Rollason, N. McL. Sage, A. L. Townsend, A. K. Wardwell, R. W. Weeks, and F. C. Weiss. Walt Muther, recently removed from California to Boston, and Fernand Weiss from Alabama added much life to the party.

For a long time, Ed Hurst, II, has been inventing things which extend the profitable use of abrasives to many new fields. It is rumored that the United Cotton Products Company, which Ed runs, in Fall River, is going great guns. He confirms this in a paragraph of a recent letter: "My business continues at a very fast

tempo and we have been expanding for several years; also the family, three grandchildren and more to come. Life does not begin at 40, but when you are a grandfather. I taught my granddaughter, aged two and one-half years, that Abie Lincoln and Georgie Washington drank Coca Cola in New Zealand. Manifestly, Professor Arlo Bates would point out the anachronism. My daughter told her daughter, 'All Tech men tell tall tales, and grandpop is no exception.'"

Gordon Howie, I, Vice-president of the Cambridge Gas Light Company, is also president of the New England Gas Association. Our class grandbaby (Pa Ready's) was May Queen at Randolph-Macon Woman's College this year. Neva was also president of Kappa Alpha Theta national social sorority, and vice-president of the senior class. She was a member of Pi secret society, the staff of the humor magazine and Sock and Buskin dramatics club. Henry Thierfelder, I, senior highway engineer for Rhode Island, retired last summer after 32 years of service. On the occasion of the official farewell, Henry received a purse from his many friends. Howard Currier, II, busy chief Ford passenger car engineer, with Mrs. Currier took an early summer vacation at Rockport, Mass.

Alberto E. Lavenas, II, died in January, 1947, Buenos Aires. From the *Boston Herald*, of July 22, 1951: "John J. Harty, president of the Harty Construction Company, 25 Huntington Avenue, died Friday in Brussels while on a European trip, according to word received here yesterday." John, who was in Course IV, looked and acted in good health at the reunion dinner; we shall miss him.— FREDERICK D. MURDOCK, Secretary, Box 788, Pawtucket, R.I.

• 1914 •

The four months' lapse between Alumni Day and the appearance of this issue of *The Review* has always seemed to your Secretary an unfortunate breach in the continuity of these notes; however, for those attending the Alumni Day events, there is always that pleasant recollection of a happy day. The usual official program was fully as attractive as ever and because of the return to a Monday date, which had been interrupted by the war, brought together a greater than usual group of '14 men. In addition to the official events, '14 held its own "At Home" from 4:00 P.M. to 6:30 P.M. at the Engineers Club. A frequent guest of past years had been Dean Moreland, but he was not with us this year, and within a week we were sorry to learn that a few days after Alumni Day he had died of a heart attack following another of a few months earlier. Your Secretary observed the following classmates attending one or more of the events: Atwood, Crocker, Derry, des Granges, Fales, Fiske, Hadley, L. S. Hall, Hamilton, Mayo, Monahan, Morrill, Morrison, Tallman, Trufant, H. S. Wilkins, Wood, and Wyld. The Alumni Office reported that Corney had signed up, but your Secretary did not happen to see him. — Since the meeting, General Jack Wood, who had retired from the Corps of Engineers and who had been studying architecture at

Harvard, has returned to his old home at Elizabeth City, N.C.

Several sons of '14 men have received special note during the summer months. Charlie Wilkins' son Dick has graduated from Norwich University where he made a fine record. He was on the dean's list three of the four years, yet found time to be on the hockey team all four years, ending up as captain. Three of the four years, he was on the track team and was also president of the Mechanical Engineering Society. Upon graduation, he received his commission as second lieutenant of Armor in the Reserve Corps. He took up immediate employment with the Westinghouse Company at Pittsburgh. — Herman Affel, Jr., 41, was one of a group to whom Philco recently paid tribute as one of their physicists contributing to the National Defense program. Herman, Sr., also has received recognition from the Bell Telephone Laboratories by his appointment as assistant vice-president. Herman's responsibility will be in connection with the technical program of the Systems Development Department. It will be recalled that Affel is one of the co-inventors of the coaxial cable which is responsible for the transmission of television as well as greatly increasing the extension of long-distance telephone possibilities. — Ernest Crocker continues his around-the-country talks for Arthur D. Little, Inc. On September 26, he was the speaker in Detroit before the Master Brewers Association. We wonder if Crocker, as an expert on smells, told the brewers how to make a beer which would not leave a telltale odor to offend the "little lady."

Dr. Alden Boor has left Chicago to be associated with the Army Chemical Department's research laboratories at Camp Detrick, Frederick, Md. Because of its confidential nature, little else may be said of his work there. — The Bell Telephone System has a fine plan of acknowledging the service of "Old-Timers." The New Jersey Bell Company has just awarded a 30-year service pin to Lin Faunce, who is buildings supervisor for the company's Jersey City district. Lin's extra-curricular activities have included membership on the Cranford, N.J., Library Board and on the township Board of Education. He has also been active in the Cranford Welfare Association and in Boy Scout work. Our Japanese ex-admiral friend, Tatsuo Furuichi, writes that he attended a recent meeting of the M.I.T. Association of Japan given in honor of the United States Mission to Japan to aid in the rehabilitation of the educational system.

The Stamford-Greenwich (Conn.) Manufacturers Council has elected Raymond MacCart as its chairman. Mac is president of Brown Brothers Foundry, Inc., as well as president of the Manufacturers Acceptance Company. In addition, he is division manager for the Petroleum Heat and Power Company.

In the July issue of The Review, your Secretary regretfully noted that the previous December, Donald Dixon of Monument Beach, Mass., had had a cerebral hemorrhage but was again able to be back at his office in charge of the local water district. On June 17, while on Cape Cod, your Secretary went to call on Donald only to learn that his funeral had taken

place that very afternoon. While seated at his desk two days before, Donald had had another stroke and had died instantly. Dixon was born at Mansfield, Mass., but since 1924 had made his home at Monument Beach. He was a first lieutenant of Artillery in World War I and for some years continued in the Reserve as a captain. His local service, in addition to being treasurer of the Water District, included chairman of the Bourne Finance Committee, town moderator and chairman of the Bourne Republican Committee. He was a Mason and a Methodist. He is survived by his wife, two sons and two daughters. — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. Ross H. DICKSON, *Assistant Secretary*, 126 Morristown Road, Elizabeth, N.J.

• 1915 •

Hello everybody, and that goes for all our reading public other than '15 men and their families.

Your hard-pressed and overworked Secretary has been relieved of some of his pressure and work. Max Woythaler is your new class agent for the Alumni Fund. Well liked and popular in our Class, Max has always been an active, generous, and loyal worker for all M.I.T. and 1915 causes, and is well remembered for the monumental job he and Weare Howlett did in locating and lining up the locations for our 25th and 35th reunions. Recently retired as president of the Hodgman Rubber Company, Framingham, Mass., Max is president of the Union Hospital there and active in many civil and community projects. He is especially well qualified for our job. All the best to you, Max, and hit that quota! You'll all be hearing from Max very soon on this year's Fund.

Many happy and pleasant visits with scattered classmates for the nomadic Macks. In Detroit we had a long talk with Loring Hall. He is well and unusually busy staving off new competition in his field out there. Both his sons have graduated from M.I.T.: one is in the service and one in business in Boston. In Buffalo we had lunch with Sophie and Ben Lapp. Ben has completely recovered from a long hospitalization following some surgery. Their son, Marshall, is at Cornell, taking the engineering physics course. He hopes to do graduate work at M.I.T. later. Ben's a grandfather; his daughter Evelyn has two sons. This year Ben and Lauretta Neal arranged a small 1915 reunion at the Buffalo Country Club. Bill and Helen McEwen, and Tess and Gabe Hilton joined us for a dinner of eight and a gay evening. Ben and Bill were having a couple of days of golf at this beautiful Club. In Corning, N.Y., we had dinner and the evening with Otto and Helen Hilbert who kindly invited our 1950 young friends, Jack and Jean Mohr. Otto entertained us with an evening of colored pictures, including some of our Coonamessett reunion. In New Haven we had dinner and the evening with Vince and Marion Maconi who regaled us with their colored pictures of their Bermuda trip last spring when they met Wally and Ardelle Pike. Daughter Lois graduated from Vassar in June, 1951, and following a summer in Europe, is now in Vince's office at

the Dwight Construction Company, New Haven, with her brother Dick, M.I.T.'44. Vince's other son, Norman (Yale, 1950), is in business in New Haven. Labor Day week end on the Cape we spent several days with Ken and Ester Johnson and Weare and Kath Howlett. We were all staying at widely scattered places but managed to get together each day, or rather afternoon, at cocktail time. Fran and I have had the usual round of pleasant visits with classmates and their families in and around Boston.

Congratulations and all our best from 1915 to these newly wed children of the Class. Hank Marion's son, John Fitch Marion, was married to Norma Betty Braun at Niagara Falls on June 23. Lloyd Chellman's daughter, Dorothy, was married to Richard Everett Fish, in Framingham, Mass., on May 19.

In May, Frank Herlihy was made assistant superintendent of the City of Boston Schools. Frank was one of three appointees selected from many candidates. As a reward for his 25 years of activity in the Boston School Department as teacher, master, and athletic coach, Frank well deserves this promotion and has the best wishes of all his 1915 classmates for success and happiness in his new work. A salute to Jim Tobey, Colonel (if you please), who writes from Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston, Texas: "I am attached to the headquarters of this organization, busily engaged in preparing a field manual on public health in military government. Since I am here for only six months and my tour of duty ends late in December, I do not live on the post, but rent a duplex apartment at a high price from one of the local patriotic rent gougers. Come up and see me some time. We have been really sweating it out here this summer. About 30 out of the last 40 days have seen temperatures of 100 or more, and it has hit as high as 105. Today was the coolest we have had in two and a half months, a mere 92. San Antonio itself hasn't much to offer. According to the Chamber of Commerce it is a most delightful place, but we haven't found it so this summer. Had a letter from Ellis S. Tisdale, who is director of training programs for the Communicable Disease Center of the U.S. Public Health Service at Atlanta, Ga. He, too, has the rank of colonel. Maybe I will see him one of these days. Will be sending another article on medical marvels in Korea to The Technology Review one of these days. It has to go through a certain amount of red tape, since I am now one of Uncle Sam's minions. We plan a trip to Mexico after I finish here and then will head home to good old New England about March." I surely do hope that we hear from Ellis Tisdale and we all congratulate him on his being in the service. We hope to hear a lot more from Jim.

All this is saddened by a heavy blow to 1915 in the sorrowful loss of Arthur Ball who died in Los Angeles on August 27. Well known and well liked in our Class, Arthur always was generous and willing in his interests for M.I.T. and class affairs and he attended all our big reunions. At Coonamessett, he seemed particularly

cheerful and later attended the cocktail party at the Copley Plaza with Mrs. Ball. Arthur was credited with several outstanding achievements in the field of optics and physics and had been a pioneer in the development of colored motion pictures. He was associated with Technicolor, Inc., for 23 years. We feel deeply for Arthur's family and have written the sympathy of the Class to Mrs. Ball. — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

• 1916 •

The 35th reunion is now history, and for those who were fortunate enough to be present it will long be remembered as one of the high lights of the many events which have followed from the first day that each of us first climbed the steps and entered the hallowed halls of Technology.

The dates were June 8, 9, and 10, and the location was the Coonamessett Ranch Inn in North Falmouth, Mass. The weather was wonderful, and the enthusiasm of the group was at a high peak. Jack Burbank and George Petit were the first to break the ice as they arrived on the afternoon of the 7th. In the early evening they were joined by Tom Berrigan, Jack Hickey, Dutch Gaus, Izzy Richmond, and our own, "the peoples choice," Jimmy Evans. Although we were not on hand to witness the activities, rumor has it that this group enjoyed a "quiet" evening while waiting for the main body of the "shock troops" to arrive. Bill Farthing, Dina Coleman, Ping Yok Loo, Bill Barrett, Joe Barker, Chuck Loomis, Jap Carr, Arvin Page, and Emory Kemp arrived Friday morning, and then for the rest of the day the gang came trooping in from all over the country. George Camp made the longest trek coming all the way from Mexico, but the trip didn't bother him a bit as he hopped right into the swing of things on his arrival. To one who was not part of the group but just an innocent bystander, it must have been a heart-warming sight to witness so many fellows greeting each other for the first time in 5, 10, and, in some cases, 35 years. Of course there was the usual practice of comparing the number of grandchildren, the size of the waistline, the number of gray hairs and, in many instances, just the number of hairs.

As part of the arrangements for the reunion, a private bar was made available to the Class. This was fondly referred to as the "Snake Pit." As the new arrivals made their appearance, they were quickly signed in and with the least amount of formality were welcomed into the "Royal Order of Snakes." The prime requisite for membership in this group was a keen facility for consumption of the latest in "snake juices." Needless to say, there were many worthy and capable members in the Order.

The housing accommodations were unique inasmuch as they did not permit the sleeping of all classmates in the same building. We had 11 cottages, six rooms in the main house, and the ranch house which had room for 18. To arrange the assignment of rooms so that everyone would be happy might have been a problem to men of ordinary talents, but your

reunion committee handled this matter with its usual ease and efficiency — with one exception. Steve Whitney was assigned a room with Ralph Fletcher, and evidently this was not the best arrangement. For some reason or other they just couldn't seem to reconcile themselves to the idea of sleeping in the same cottage. Perhaps it wasn't as bad as it sounds, but what else would make them want to stay up each of the three nights going from one cottage to another setting off fire-crackers under this bed or that bed as though they were jumping off on a "second front" of their own.

Jap Carr and Herb Mendelson showed that they were ready to jump into the competition at Forest Hills when they overpowered the experienced play of Izzy Richmond and his partner (a young fellow who happened to be in the area and didn't know any better) in a grueling tennis match by the scores of 4-6, 7-5, 7-5. Izzy did admirably well, but the handicap of a young fellow without the drive and enthusiasm which is so akin to the old-timers was just too much for him. The pressure was really on Arvin Page as he teed off in quest of the President's Cup in the Class Golf Tournament. He knew that Tom Berrigan had entered the competition also, and Tom's press clippings would worry even the best of them. There were 20 entries in the tournament, and as the scores were turned in Arvin assumed the leadership with a sparkling 86. Finally, Tom Berrigan was the last one out on the course and he could be seen on the 18th tee getting ready to hit his tee shot. At this point, Arvin's 86 was still the low score. Tom hit a beautiful drive and then, with the ease of a professional, slapped an iron shot on the green on his second shot. As the crowd's silence was broken by an occasional click of a camera, Tom coldly stroked the putt into the cup. Little did those of us who were watching realize how important this putt was to Tom. That putt had given Tom a score one under the course record. The highest score ever made on this course was 164. Tom made it in 163. Arvin won the President's Cup.

Early Saturday morning, the crowd started lining up for the big softball game, and at 3:00 P.M. as the game got underway every seat in the park had been sold. This was not difficult to understand as this event was billed to be the dream game of the century. When before in the history of the sport had there ever been such greats as Hy Ullian, Hal Russell, Jack Hickey, Cy Guething, Bill Drumme, and Steve Berke, to name just a few, all on the same diamond at the same time. On top of that, Jap Carr and Tom Berrigan, both of whom have been in there pitching for the past 35 years, were slated to be mound opponents. These two stalwarts certainly gave evidence of their ability as the game progressed. Never before had we seen two men with such fine control. Only on rare occasions was the ball thrown in such a manner as to make it impossible for the batter to hit. Even then, we suspected that the batter was only missing the ball to make the pitcher look bad. Three adding machine tapes later, the game ended with nobody knowing who won; and as far as we could

determine, nobody giving a darn. It might be well to mention here that liquid refreshment was served to the players as the need arose throughout the game.

There was another competition of some sort about which we have been able to get little or no information. The only thing we do know about this is that Ralph Fletcher was the victorious entrant and was awarded a cup with the inscription, "Champion Fiddler, Diddler, Piddler." Our imagination has been worked overtime trying to figure out what a "fiddler" or a "diddler" or even a "piddler" might be, but we haven't come up with the answer. Until we can determine it for ourselves or we get the answer from one of you, it will remain a deep mystery.

Less strenuous but every bit as interesting and enjoyable were the many games of bridge and poker that attracted a number of the fellows. While the card games were in progress, Allen Giles played the piano in the background. He was definitely a relaxing influence on the gang as he played hour after hour, never seeming to tire, never running out of different tunes to play. At times, groups formed around the piano and harmonized on some of the favorite Technology songs or some of the ever-popular ballads. Here again, the one who was not part of the group but just a bystander must have been impressed by the friendly warmth that flowed among this group that had been brought together by four years at the same college. In passing, we would like to say that we did have some canasta players in the group. Need we say more?

On Sunday afternoon, the prizes were awarded for the different events. Jap Carr and Herb Mendelson received polished granite bookends in recognition of their accomplishment on the tennis court. Arvin Page was presented the President's Cup for his victory in the golf tournament, with special recognition being given to the fact that he defeated, among others, the coming star of tomorrow, Tom Berrigan. Ralph Fletcher received the Fiddler, Diddler, Piddler Cup for his mysterious talent. Then there was the drawing to see who would be the lucky winners of three granite birdbaths. Barney Gordon, Hal Gray and Theron Curtis carried off these prizes. Two car racks were auctioned off with the big money men being Dina Coleman and Cy Guething. A set of polished granite bookends were also auctioned off, and again Dina Coleman proved that "money talks." Part of the funds realized from this auction, which was handled so capably by Bill Farthing and Dina Coleman, went into the Class Gift Fund and the remainder was used to offset some of the incidental expenses of the reunion.

The group settled down to business on Sunday afternoon, just long enough to indicate that they were very pleased with the present officers of the Class and that a change was definitely not in order. The lineup remains the same: president, Bill Farthing; treasurer, Hovey Freeman; secretary, Ralph Fletcher; assistant secretary, Harold Dodge; and two members-at-large, Steve Brophy and Chuck Loomis.

Barney Gordon again was one of the high lights of the reunion with his singing of "Ol' Man River." If anything,

Barney's voice seems to be getting richer with each passing year. It always seems to be a tossup as to whether or not Barney gets more enjoyment from singing for the fellows or the fellows get more enjoyment listening. Whatever the answer is you can be sure that Barney's singing will always be a must at our reunions. Francis Stern came in for a well-deserved share of the spotlight with his very entertaining sleight-of-hand tricks. He had one trick wherein he changed a penny into a dime with the greatest of ease. It might be a good idea for all of us to bring our piggy banks to the next reunion and then Francis, with his amazing talent, can give some real competition to the U. S. mint.

By late Sunday afternoon, most of the fellows had left the Inn to go either to their homes or to Boston, where they stayed Sunday night before attending Alumni Day at the Institute on Monday. All carried with them the nylons, cookies, locks, and so on, which had been given to them by the "loot" committee. To a man, they were agreed that this had been a wonderful reunion. In fact, they were all so pleased that a strong movement began right there at Coonamessett to make it possible to have a reunion every year instead of every five years. It was not intended that this annual reunion should be anything as elaborate as the ones we have had in the past, but one that would make it possible for all those who so desired to be together at least once a year on a reunion week end. Your Secretary has received many letters since the reunion, and it is surprising and pleasing to see how many fellows do want to have another one next year. We would like to hear from as many as possible on this plan, so that it will be possible for us to have a complete picture of the wishes of the classmates prior to making the arrangements for the get-together next year.

Shortly after six o'clock on Sunday night, Bob Wilson arrived at the Inn. Quite a few of the fellows were staying at the Inn that night before going up to Boston for the Alumni Day activities, and they gave Bob a real welcome. The group, which included Bill Barrett, Joe Barker, Steve Berke, Steve Brophy, Ray Brown, Dina Coleman, Jim Evans, Bill Farthing, Ralph Fletcher, Hal Neilson, Arvin Page and Bob Wilson, settled down to a quiet evening of cards and conversation, following a fast-moving two-and-a-half days of activity and excitement. Early the following morning, the "rear guard" of the Class made the trip to Boston for the Alumni Day activities and the class cocktail party at the Copley Plaza Hotel. Coonamessett Ranch Inn licked its wounds and reverted to its normal pattern of doing business.

Most of the day was spent at M.I.T., but around four o'clock the group moved to the Copley Plaza Hotel for the class cocktail party. This proved to be the perfect finale for the reunion activities. There were at least 100 present and this number included classmates and their wives, friends of classmates, and invited guests. The invited guests included Professor George Russell'00, Charles Spofford'93, Donald Severance'38, Walter Humphreys '97, H. E. Lobdell'17 and Obie Denison

'11. Azel Mack, who is a member of the Class of 1915 and who helped tremendously in the laying out of the reunion plans, was also an invited guest along with his wife. As an added attraction, beautiful orchids, which were flown in from Hawaii, were presented to each lovely lady as she arrived at the party. This party lasted until shortly after six o'clock, and never before has there been such an enthusiastic gathering. One of the really funny incidents of the party centered around Ralph Fletcher's daughter-in-law and his nephew's wife. They arrived at the party wearing wigs: one had a flashy red wig and the other wore a pearl gray wig. As Ralph took the girls around introducing them to the members of the Class and their wives, it developed into a real comedy. As the cocktail party came to a close, some of the group went to the Alumni Banquet and others drifted off to points unknown for their own private parties. The book had been closed on the story of the 35th reunion of the Class of 1916, M.I.T.

There were many who intended to come to the reunion but who, at the last minute, found that they couldn't make it. Telegrams were received from the following, expressing their regrets: Vert Young, Vannever Bush, Willard Brown, Dip McClure and Bridie Webber. We were very sorry to receive a special-delivery letter from Maurice Holland saying that he could not make it. Maurice, his wife, and his boy were in an automobile accident shortly before the reunion, and were badly shaken up. Fortunately, Maurice and his son were in the clear at the time of Maurice's last letter, and Mrs. Holland, who was the most seriously hurt, was well on the road to recovery. Maurice is looking forward to being with us at next year's reunion, and we hope that all the others who couldn't make the 35th will be on hand, too.

There are many who should receive thanks for their individual contributions to the success of the reunion. To list them all here hardly seems necessary. We would like to say, however, that without their help the great success of the 35th reunion would never have been possible. It is with sincere gratitude and congratulations that we commend you on a job well done.

Since we have used our quota of space for this issue of The Review, we will wait until the next issue to list the names of those who attended the reunion. Before closing this column, the first of the new year, we would like to remind you again that your letters, long or short, are what make this column. Keep them coming. We would also like to remind you of the plans for another reunion next year. More information will be given to you in later editions of this column. In the meantime, think about it. We want everyone to be on hand for this one. — RALPH A. FLETCHER, *Secretary*, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, Inc., 463 West Street, New York, N.Y.

• 1917 •

The death in July of Admiral Forrest Percival Sherman, an ex-member of the

Class, was a blow to the nation. Once called "the man who is responsible for winning the war in the Pacific," the flying admiral succeeded Admiral Denfeld in the post of Chief of Naval Operations in 1949. He did a great deal during his relatively short term of office to unify top command of the armed services. — Walter Sims died suddenly on June 8. He had been general manager of the Greenville Finishing Company in Pawtucket, R.I., for the past 25 years, and is survived by his wife and two sons.

An item from the Concord, N.H., press brings us up to date on the activities of James Doon. He has been secretary of the New Hampshire Public Service Commission for the past 18 years, and political rumor has it that he is under consideration by the Governor for appointment to the Commission as councillor. — The degree of doctor of laws was conferred on Lewis Douglas, former U.S. Ambassador to England, by Columbia University in June. — Barnett Fred Dodge went to Japan as a member of a commission on engineering education. Requested by the Allied Supreme Command, and jointly sponsored by the American Society for Engineering Education and the Unitarian Service Committee, the Commission's itinerary includes seven major Japanese cities. Barney is chairman of the Department of Chemical Engineering at Yale.

Al Ferretti has been elected first vice-president of the Engineering Societies of New England. We understand that Dutch du Pont is mainly responsible for the sixth longest suspension bridge in the world: The new Delaware Memorial Bridge which spans the Delaware River south of Wilmington. Dutch was chairman of the Delaware State Highway Commission for almost 25 years, and throughout that period kept the bridge project alive and progressing, almost singlehanded at times. It was a long legal, political, and financial battle, but the bridge is there today, and Dutch has received fine recognition from the press and public for his work.

Walt Whitman has a new address: Washington, D.C. On July 13 he was named chairman of the Research and Development Board of the Department of Defense by President Truman. Walt has a large job on his hands, but one for which he has an invaluable background of experience, for, among other World War II jobs, Walt was in charge of all basic chemicals on the War Production Board.

News was received of the death of Dr. Daniel C. Steelsmith this past summer. He had been with the Virginia Department of Health. — Following earlier rumors reported on the activities of John Holton, this summer your Secretary visited John and Sally at Skaneateles, on the east edge of the Finger Lakes, and later, by coincidence, a visit to John's grandchildren at his old home town at Williamsburg, Mass. His twins, Bobby and Nancy, are leaving for school this fall. His son, John, is following father's footsteps as a chemical engineer and his daughter, Mary, is carrying on the race. Reports implying John's contribution to Carrier's successful activities have not been exaggerated.

Captain Noah W. Gokey has been transferred recently from the Norfolk

Naval Shipyard to the Webb Institute of Naval Architecture, Glen Cove, N.Y. Your Secretary recently received a post card from Lobby, who was again trotting about the globe, from Dublin. "After checking over matters in London during July, I spent a few days with the Heymans in Bruxelles and then a week in Holland before Norway. From Oslo, Amund Enger '27 and I drove another 1,000 miles through the fjord section, almost cutting the Arctic Circle. Now I'm here for a few days to try to find out what makes the boys tick on the 'ould sod. Since there is but one Alumnus in Eire (a meteorologist at Shannon), my research has been solitary, yet I conclude (and happily) that sirloin at five shillings per portion at the Gresham, and Guinness's at tenpence are significant factors — though 10-year old Jameson's on tap may have a bearing." Another world traveler is Enos Curtin who gives the following word from Madagascar: "Couldn't find the M.I.T. club here! All they have is the monkey wrench in the gear box club. But they have a lot of graphite. Starting back for reunion '52."

Alumni Day last June was reunion time for the following '17 men: Ted Bernard, Ray Blanchard, Ken Childs, Bill Dennen, Stan Dunning, Art Gilmour, Clarence Holt, Lobby Lobdell, Al Lunn, Win McNeill, Sherry O'Brien, Tubby Strout, Gerald Thomson, Walt Whitman, Rudy Beaver, Tom Meloy, Harold Chisholm, Ed Tuttle, Larry Gardner, and Ray Stevens. Dick Loengard and Phil Hubbard had hoped to join us but could not make it. There was a get-together at the St. Botolph Club for cocktails before dinner at the Copley. Lobby and Al Lunn were privileged to sit at the head table. It was noted that Lobby deserted us for the Class of '36. Al did a wonderful job as president of the Alumni Association and toastmaster.

The following '17 offspring are carrying on: Ken Childs's boy is captain of the M.I.T. track team. Bill Dennen is the only '17 man who has a son on the Faculty of the Institute.

Now that '51 is on the wane, it is not too soon to look forward to reunion in '52. The latest bulletin from Stan Dunning says: "Wentworth-by-the-Sea has accepted our reservation for the reunion, to be held on June 6, 7, and 8, 1952. There will be the same setting and accommodations. Rooms for those who want them are reserved and there will be further word about them. Lucius Hill has agreed to act as reunion treasurer. Soon there will be an appeal to the class members for a donation to the fund." Tubby Strout and Stan will keep us posted on developments. — RAYMOND STEVENS, Secretary, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass. FREDERICK BERNARD, Assistant Secretary, 24 Federal Street, Boston 10, Mass.

• 1918 •

We were represented at the Alumni Day Luncheon last June by a goodly assemblage including (in random order) Bill Wills, Ray Miller, Don Goss, Julie Howe, John Kilduff, Tom Kelly, Ralph

Mahony, Sax Fletcher, John Norton, Fred Philbrick, Harry Camp, Bob Means, Lester Conner, Paul and Alan Howard, Max Seltzer, Eli Berman, Ed Rogal, Henry Richards, Jack Hanley, Walker, and myself. The tent where said luncheon was served was the closest thing to Greenland's icy mountains, with the exception of the Cliff Hotel during our 30th reunion; on which occasion, deponent remembereh, Jack Hanley drew a bathtub full of hot water to keep his room tenable.

Albert Haertlein is now not only Gordon McKay Professor of Civil Engineering at Harvard, but also Associate Dean of Applied Science. He has been working recently on problems in the mechanics of structures. His career has included engineering practice as well as teaching and research at Harvard. He is a former president of the Boston Society of Civil Engineers and of the Engineering Societies of New England, and is at present vice-president of the American Society of Civil Engineers. He holds the honorary degree of doctor of engineering from Northeastern University, 1949, and the Desmond Fitzgerald Medal of the Boston Society of Civil Engineers, 1937. Writing from the vice-presidential desk of the Revere Copper and Brass Research Department (a company founded by a patriot named Paul whom you know about because of his hurry to get to Concord and Lexington one night), Dick Wilkins says: "As you know, I am rather a renegade and deserted the chemical engineering field for the purpose of trying to imitate a metallurgist, and for that reason my contacts with classmates have been somewhat infrequent. I met several of the fellows at the Sloan dinner that I had not seen for over 30 years and it was rather a blow to me to realize what a bunch of elderly gentlemen I had gone to school with. It was a great pleasure to run into Art Smith, Pete Sanger, Monk Pierce and several others."

Yale Evelev, under a late spring date line from Hollywood, Fla., says: "If you wonder what I am doing in Florida my answer is your article about me in The Review. You probably remember tracing my climb to success by first being short in making up a weekly payroll of \$50 and gradually growing to a point where I was short in making up a weekly payroll of \$10,000. Well this kind of operation works out pretty well financially, but evidently proves rather tough on the nerves and well being of the operator. Whatever the reason was, on August 16, 1950, a memorable day in my calendar, I had a heart attack — 'coronary occlusion.' It meant seven weeks in the hospital, several weeks home and then a leisurely trip to Florida, with the motto of 'take it easy' as the governing factor in all my movements. However I feel pretty well and have very little to worry about. Our boys are running the business. They are starting where I left off. In other words they have a very tough time now to make up a payroll of about \$12,000 to \$15,000 a week. But they seem to be managing. It proved to me that I am no longer indispensable in the running of the business. Mrs. Evelev and I are therefore returning to Reading by way of Los Angeles, San Francisco, Seattle, and

Vancouver. We should reach home by the end of September."

From Connecticut, as well as from Florida and Cambridge, comes the evidence that time has matured our efforts in our respective fields. Don Merrill is still with the glass company in Hartford, and gives an account of himself which testifies to his continuing sense of humor and interest in small boats. (He had one on the Taunton River when we attended classes in Rogers and Walker.) "I have been pretty well the past year or more. My ills are passé as both Ruth and Judy have been hospitalized since I was. Ruth had a vertebral disc operation last summer with prompt and lasting benefit. Judy had her appendix out three weeks ago and is near 100 per cent recovered now. Dave is a junior at the University of Connecticut nominally majoring in philosophy although mainly occupied in hand carving of frat paddles. He also hurries home week ends to work at boat building. Beth and Janice are a healthy pair. You asked the news with me and I answer with family which I guess is the chief interest. My present work involves some interesting problems; a lot of mathematical analysis applied to processes as worked out by cut and try. Hope by finding how they work to recombine all the variables for maximum performance. I've had to whittle my garden way down (vegetable garden becomes vestigial garden), so for back-yard activity took up boat building. Produced a 10½-foot sailboat which we have long needed at Martha's Vineyard and took her over on the car last summer. This winter rebuilt a 12½-foot derelict that came down the Connecticut River. Meantime, Dave is building a 17-foot motor boat. I'm still turning up arrowheads, too."

Finally, for this edition, comes what might be called a cumulative crop of news from E. W. Huckins. It does not quite go back to the Tech Show Chorus his sophomore year, or the fetching mustache his senior year, but let him tell it: "When I got out of the Army after World War I, where I served overseas as a second lieutenant, Corps of Engineers, I worked for Stone and Webster on construction work here and there, eventually becoming an assistant construction manager, just in time to get tossed out on my ear, along with all the rest, by the depression. I eventually started work for the government first with the old P.W.A., and later, for a very short time, for the Department of Agriculture, making investigations of construction or engineering projects. I then became a civilian engineer with the Bureau of Yards and Docks, Navy Department, for a while until the start of World War II. In 1942, I became a division engineer with the Defense Plant Corporation, a part of the Reconstruction Finance Corporation. I was at Houston, Texas, responsible for the supervision of construction on some 14 hi-octane gasoline refineries in the Texas-Oklahoma area. At the war's end I was assistant regional engineer in Washington, and continued with the RFC when the Defense Plants Corporation was liquidated. I then made studies of engineering or construction aspects of some of the larger applications for loans and in some cases followed

the field construction work. In March of this year, the situation with RFC was such that little work was coming in and there did not seem to be much prospect for more work so I decided to quit. On April 1, I started working for my classmate, Frank Creedon (though he doesn't know it), when I joined the Nonmetallic Branch, Building Materials Division, National Production Authority, Department of Commerce. And so I get down to the real reason for this letter: Will you please advise the proper parties to change my mailing address for The Review and other material to the Burlington Hotel, Washington 5, D.C."

And that, my dear children, is a sample of the kind of crops our Class has been growing.—*GRETCHEN A. PALMER, Secretary, The Thomas School, The Wilson Road, Rowayton, Conn.*

• 1919 •

Congratulations to our classmate Thomas H. Bott, Jr., on his election during March of this year as vice-president and treasurer of the Beverly Savings Bank, Beverly, Mass. Likewise, on his election as vice-president of the Beverly Rotary Club. He is also chairman of the committee for the celebration of the "325th Anniversary of the Founding of Beverly," held during the period August to November, 1951. A recent note from our classmate Jacob Braverman states that he is still connected with the Empire Corrugated Container Corporation and everything is coming along just fine. He thinks a booklet for our 35-year milestone is an excellent idea and offers to help prepare it.

Your Secretary recently had a nice long letter from Bernard S. Coleman, owner and director of the Paradise Sanitarium and Hospital in Los Angeles, Calif. It is good news to learn that his older son, Ken, 25, has fully recovered from his serious attack of polio during the 1948 epidemic and is back at U.C.L.A. specializing in public health and hospital administration. At the conclusion of this course, he will join his dad at "Paradise" as assistant administrator. Roger, his younger son, 22, graduated from U.C.L.A. and was married on August 26 to Ruth Rykoff. He also mentioned that both he and Mrs. Coleman celebrated their 29th wedding anniversary at Lake Arrowhead. He is kept quite busy at the Sanitarium but manages, somehow, to keep interested in civic affairs and is chairman of the Welfare Federation Committee on Chronic, Convalescent and Custodial Care. In addition, he is on the executive committee of the Council's Health Division, a member of the Committee on Problems of the Aging, the Hollywood Bowl Opera Association, and several other community deals. He has seen Messrs. Untersee, Dalton and Brown at alumni affairs. In closing his letter, he adds: "Regardless of 'what,' count me in on the 35th. I still remember the 25th. Regards to the '19's wherever they may be."

Charlie Farist wrote to say his daughter, Anne, graduated from Radcliffe last June, which exercises he attended. He also added: "I felt rather out of place sailing down Boston Harbor with the Har-

vard class of '51, and one other M.I.T. man. We didn't dare show our colors!" Jack Fleckenstein and his daughter, Joan, left by car on a trip to Fairbanks, Alaska, for the month of August. They planned to fish along the way; also take photos, make notes of what they see and perhaps pick up a few geological specimens. Joan has completed her second year at M.I.T. in Course XII, Geology, and was on the Freshman Reception Committee for this fall. He mentioned that she is doing very creditably and it now looks as though she would eventually graduate with honors. She plans to take a master's degree somewhere after graduation and perhaps take other graduate work later. Latest word received from George G. Fleming says that he is now in Washington, negotiating contracts for Navy's Bureau of Ordnance, and is kept pretty much on the go. He sums his note with: "Being so close to two daughters, I just graduated at Wellesley and expect to graduate next year at Wheaton. Best regards to all the classmates."

Received a very interesting letter from Edmund Flynn recently. He said his family was spending the summer up in Maine where his daughter, Katherine, conducts a sailing school as an independent enterprise. In September, she expected to enter Colby College. Doc also mentioned that George McCarten is twice a grandfather and is teamed up with Sam Colton making a lot of what it takes and enjoying himself running the Macco Chemical Company in Cleveland; and that Edward Adams Richardson, Publications Department, Bethlehem Steel, is currently secretary of the M.I.T. Club of the Lehigh Valley. George Halfacre '18 is now general superintendent at Palmerton, Pa., and Doc himself is superintendent of the West Plant. He is greatly enjoying the job of Honorary Secretary for M.I.T. down at Palmerton, since it combines close contact with the Institute and opportunity to work with the kind of boy who aspires to go there. Has been active in the young M.I.T. Club of the Lehigh Valley since its formation. He also mentions that he was glad to see Don Way at the dinner held in New York.

A recent card from Ralph H. Gilbert states that the situation with him is just about the same — everything going smoothly and everyone a few years older. His son, Robert, 19½, is a senior at Brooklyn College and is majoring in physics; and his daughter, Ann, 17, is a freshman also at Brooklyn College. Ralph also commented that the 35-year booklet is a good idea.

Had a very interesting letter from Laurence A. Gillett acknowledging our round-robin letter to members of the Class. He is chief engineer of the Virginian Railway and is still trying to keep his head above water, especially right now, due to the heavy export coal business which is taxing the railroad. This has resulted in the necessity of making several engineering studies to increase the capacity of the railroad, some of which have reached the construction stage. After graduating from high school in Chicago in 1944, his son served for three years in the Navy during World War II. He then en-

tered Virginia Polytechnic Institute at Blacksburg, Va., graduating with honors in chemical engineering a year ago. He entered M.I.T. last fall as a graduate in Course XV and has completed his first year in this Course (School of Industrial Management).

We all extend our congratulations and felicitations to classmate Francis Davis Porcher on his recent marriage to Dorothy Stillwell, of Essex Fells, N.J. Hearty congratulations are also extended to Bliss M. Ranney and Mrs. Ranney on their Silver Wedding Anniversary celebrated on July 20 with a family gathering at the home of their son, John, and his wife.

Business keeps Ark Richards rushing but he found time to take an 18-day Caribbean cruise in March, on the *Mauretania*. His older son, Whitman, entered Technology in September, 1950, and lives at Chi Phi — played # one on the freshman squash team — was captain of the lacrosse team and hitting it for first honors with a 4.6 average. He writes, "just the opposite of his old man." He sees Carl Svenson and they reminisce while playing bridge.

Received a card recently from E. E. Saunders, Captain, CEC, USN. Ted has completed a 10-month course at the National War College at Fort McNair, Washington. After reporting to the Office of Chief of Naval Operations, he has been scheduled for a two-year tour as liaison officer for the Bureau of Yards and Docks in the Logistics Planning Division. His son, a lieutenant (jg), USN, has been selected by the Office of Naval Research to take a two-year P.G. course in advanced physics at Stanford, which may lead to a third year and a Ph.D. He also has a married daughter living in Charlotte, N.C., and two teen-agers at home.

Max Untersee is still in housing and architecture. After learning that it requires a 36-mile hike to reduce one pound, he is going to resort to dieting. He said seven years in California leaves him a humble Yankee, but he is glad for one thing — his fine overcoat is not worn out and his real elastic rubbers are still good; but oh, how he misses the seasons. He hopes the gang is still puffing — and some producing — not all retired.

Have been advised that our class registration for Alumni Day, June 11, 1951, consisted of: Ray H. Bartlett, Marion Daniels, Maurice E. Goodridge, George W. McCreery, Eugenie Mirabelli, Hyman P. Selya, Isidor Slotnik, Earl P. Stevenson and H. Stanley Weymouth. — *EUGENE R. SMOLEY, Secretary, The Lummus Company, 385 Madison Avenue, New York 17, N.Y.*

• 1920 •

Once again we start off the new Review year with the hope that all of you have had a good summer and lots of time off and also with the hope that this year you will take pity on your aging Secretary and supply him with news that will make these notes good reading for your classmates.

Perhaps the most noteworthy event of the summer was the gala sendoff provided by enterprising classmates for Flossie Fogler Buckland when she departed on the *Queen Elizabeth* on August 28. Flossie's

conquest of Europe was going to include, among other things, a possible speech in the native tongue at Belfort, France, on the subject of "Transient Temperature Distributions in D.C. Machines." We would think this would be tough enough to do in English, but knowing Flossie, we are sure that she could do it in French, Russian, or Chinese if she set her mind to it. The going away party included none other than the President of the Alumni Association, Al Glassett, Helen and George Dandrow'22 and the Harold Smidgys. Don Severance'38, Secretary of the Alumni Association, lent additional M.I.T. glamour to the party, and accompanying Flossie on the trip was Nan Alger, daughter of Phil Alger'15. This distinguished gathering started off at the Rainbow Room and finished up at the San Marino Restaurant. All we can say is that the rest of us are exceedingly envious that we weren't there, too.

Now, going way back to Alumni Day last June, it is a pleasure to report that the Class had an exceedingly fine representation during the day and at the Alumni Banquet. Among those present were the following: Norris G. Abbott, Jr., E. Franklin Badger, Harold Bugbee, Alan W. Burke, Edward L. Cochrane, George F. Des Marais, William F. Dewey, Jesse I. Doyle, Edward S. Farrow, Richard H. Gee, Alfred T. Glassett, Clement J. Halilinan, Daniel J. Hennessy, Frederick J. Hopkinson, Charles H. Klingler, Pierre F. Lavedan, George C. Manning, Roger G. Mossop, John M. Nalle, John C. Nash, Robert D. Patterson, Mrs. Dorothea B. Rathbone, Walter A. Sherbrooke, C. Richard Soderberg, B. Alden Thresher, Alfred B. Wason, Elbridge Wason, Ernest P. Whitehead, Philip L. Young.

Speaking of reunions, Course X-A had a 30-year reunion last June and of course this comprised the 1920 Course X graduates. They did it up fine by taking a suite at the Ritz Carlton Hotel in Boston and six of the nine who finished that first X-A year were present; namely, Ed Farrow, Charlie Klingler, Scoop Mossop, Phil Haebler, Phil Young and Frederick Hopkinson. Johnny Abrams had expected to be there but it turned out that he had to watch a gusher come in out on some of his oil property. — Ed Farrow's daughter, Ruth Elizabeth, was married just about reunion time to Robert G. Caldwell, Jr., of Alexandria, Va.

George Des Marais has been made a member of the firm of Stockbridge, Borst and Leek, 10 East 40th Street, New York City, prominent patent and trade-mark law firm. John Barker, who is assistant director of the Maine General Hospital in Portland, has been appointed treasurer of the Maine Heart Association. Ralph Booth comes in for prominent mention in a very handsome half-century presentation booklet issued recently by Jackson and Moreland. Ralph is a senior partner of the firm with which he has been identified ever since graduation. For more than 20 years now he has been responsible for all of their engineering studies and design and construction work. During the war he was a vice-chairman of one of the divisions of the National Defense Research Commission and their representative on the Joint New

Weapons Committee. He was deputy chief of the Transportation Development Division of the O.S.R.D. and he was consultant on the War Utilities Committee under the War Production Board. Another famous classmate is Ned Cochrane who this summer was presented in London with honorary membership in the Institute of Naval Architects and the Institute of Marine Engineers. Ned is responsible for many new developments in destroyers, submarines and warships for the United States Navy. The honorary membership referred to above was last bestowed on Winston Churchill and the King of Denmark. News of still another famous classmate, Ed Burdell, is that he was made an honorary member of the American Institute of Architects this year "for distinguished service to the profession of architecture or to allied arts and sciences." I do not need to remind you that Ed is president of the Cooper Union. He is also chairman of the Commission on Architectural Education and Registration of the A.I.A.

John Crowley and Ed Farrow have been made alumni members of M.I.T. Corporation Visiting Committees for the Division of Industrial Cooperation and the Department of Chemical Engineering, respectively. These committees meet periodically to give the departments the benefit of the interest and experience of groups of individuals other than those actually connected with the Faculty or Administration of the Institute.

We note with pride and satisfaction that Albert H. Tomlinson of 320 Upper Mountain Avenue, Upper Montclair, N.J., has changed his class affiliation from the "quantity" Class of 1921 to the "quality" Class of 1920. We congratulate Al and hope he will be with us for many reunions to come.

Brigadier General Robert H. Van Volkenburgh has left Columbus, Ohio, and is now in San Francisco. John Lucas' new address is Cloverly Circle, East Norwalk, Conn. Tony Anable's present address is Barry Place, Stamford, Conn. M. E. Martinez is now in Santiago, Chile. Arthur Morley is now in Asheville, N.C. Gerry Tattersfield's present address is 8035 Seminole Avenue, Philadelphia. Ralph Larsen is now living at 182 Church Street, Newton, Mass. Art Littlefield is still with Bemis Bros. Bag Company and his address is 408 Pine Street, St. Louis. Henry Leigh is at 6 Peter Cooper Road, New York City. Captain Harold J. Murray has left Brockton, Mass., and is in Lincoln, Neb. Winslow Wetherbee is with the Goodyear Tire and Rubber Company in San Francisco. S. M. Passell has left Cleveland and is in Detroit, address, 18453 Woodingham Drive. Hymen Bell is at 485 Beach Street, Revere. Murray Whitaker is now in Key West, Fla., with the Key West Shrimp Exchange. George I. Brown has moved from Cincinnati to Kalamazoo, address 1421 Henderson Drive. George Hopkins is now living at 910 Skyline Drive, Laguna Beach, Calif. Colonel Austin D. Higgins is back from Japan and Korea and is at Camp Roberts, California.

It is with sorrow that I must report the untimely death of Bob Turner in Alton, Ill., on May 2, last. Bob was chemical

engineer for the Western Cartridge Company. He was exceedingly active in community affairs and it is believed that his intensive application to business and the community led to his loss of health. Surviving, besides his wife, Dorothy, are two sons; James, now with the United States Air Force and William, also in the Air Force. Those of us who enjoyed a visit with Bob at the 30th reunion need not be reminded what a wonderful fellow he was and what a great loss his passing is to the Class. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

• 1921 •

Greetings and a hearty welcome to our 31st year of monthly meetings in these columns of *The Review*. Joining in the welcoming party are two new members of the group who serve you in class affairs — Ed Farrand, class agent, and Warrie Norton, who heads the Fifty-year Gift Committee — as well as President Ray St. Laurent, Alumni Council representative, Chick Kurth, and your Secretary.

Our 30th reunion in June turned out, per the advance notices, to be the best in a long series of superlative gatherings, each one attracting more and more members of the Class and producing increasingly complimentary remarks attesting that everyone had a good time. To Irv Jakobson, chairman of the Reunion Committee, and to his colleagues — Mich Bawden, Mel Jenney, Chick Kurth, Jack Rule, and Ted Steffian — go our sincerest thanks for carrying out an assignment of such major proportions so perfectly as to win the unanimous acclaim of all present. This group spent many months in meeting and planning the celebration, and each and every one should get a big hand for contributing to our enjoyment and maintaining our exceptionally strong class fellowship. Some 143 members of the Class and their guests joined in the four-day festivities at Pine Orchard, Conn., and at Cambridge. Friday, June 8, saw the early birds collect for luncheon at the Sheldon House, with golf the principal afternoon activity. A cocktail party on the spacious lawns, dinner, and an evening of reminiscing followed. Saturday's program provided all kinds of sports and a series of sailing trips on the Sound arranged by Skipper Irv Jakobson and his nephew, George Hossfeld, Jr., '48, in Irv's trim 50-foot aluminum sloop, the *Dowsabel*. Irv was toastmaster of the evening banquet and Professor Emeritus Bill Timbie was the guest of honor. President Ray reported various telegrams, Zam Giddens' class gift report, our status in the Development Fund, new appointments and acknowledgments to all who have helped. Your Secretary-Treasurer reported on the status of the Class. There was a brief memorial for those who have left our ranks.

In the balloting, Ray and your scribe were re-elected as president and secretary-treasurer. There followed one of the most heart-warming events that your officers have ever experienced in their 30 years of very happy association in 1921 affairs, the surprise presentation of a remembrance to each of us from you. We want to express sincere thanks and appreciation for the specially etched sets of

M.I.T. glassware. They are beautiful and highly-prized reminders of a memorable occasion and a grand bunch of real friends.

Golf prizes went to Ollie Bardes and Larry Davis for low gross of 81, Wally Adams and Jack Kellar for low nets of 70 and 71, Munnie Hawes for the most sixes, and Rufe Shaw for the most exercise. Fred Rowell, Buz Burroughs, and Lou Mandel won the kickers' prizes. Other awards went to Bill Sherry, father of eight, for the largest family; to Bill, Jr., the youngest guest; to Vern Cole, who topped the list with five grandchildren; to John Mattson for the most sons now at M.I.T.—two, to be exact; to Phil Coffin for having four of his five children in college at the same time; to Ed Chilcott of Los Angeles for coming the longest distance; to bachelors Moose LeFevre and Jack Parsons; and to the group with the least hirsute adornment—Al Lloyd, Phil Nelles, Ernie Pauli, Bill Ready, Fred Rowell, Ted Steffian, and Grand Champion Bob Waterman. Mel Jenney auctioned Ted Steffian's excellent illustrations for reunion mailings to Bill Sherry, Jr., proceeds to go to the class gift. Mich Bawden donated old *Techniques* for the same purpose, the successful bidders being Rod Bent and Paul Hanson. Rufe Shaw, the first student of Course VI-A, introduced Bill Timbie, who headed this first co-operative course in the United States, started by the Institute with our Class. Bill has attended all of our reunions. Larry Davis gave a startling account of business behind the Iron Curtain, and our skillful young railroad president, Jack Barriger, boss of the Monon, entertained with his experiences in Hoosier hauling and humor.

By Sunday noon and through the afternoon, most of the group were heading for Alumni Day at Cambridge. It was preceded by President Jim Killian's dinner for Honorary Secretaries and Alumni Club officers at the Brae Burn Country Club, Newton, which was attended by Ed Farrand, Munnie Hawes, Sumner Hayward, Irv Jakobson, Ed Praetz, Helier Rodriguez, Bill Sherry, and your Secretary. On Alumni Day, our annual 1921 cocktail party jammed the doors of a suite at the Copley. Again Saul and Regi Silverstein were generous and gracious host and hostess. The Stein banquet that evening was the final event of the reunion program.

Classmates and guests present at Pine Orchard and Cambridge included: Fred Adams, Wally Adams, Al Bachmann, Ollie Bardes, Jack Barriger, Maurice Basinow, Mich and Mrs. Bawden, Rod Bent'19, Charlie Breed, Larry Chellis, Ed Chilcott, Cac Clarke, Dewey and Mrs. Clarkson, Bill Clements, Phil Coffin, Vern Cole, Bob Cook, Josh and Mrs. Crosby, Jim Cudworth, Jack Cummings, Larry Davis'22, Ed and Mrs. Delany, Herb DeStaebler, Mercury Dooley'20, Chick Dube, Ed Farrand, Fritz and Mrs. Ferdinand, Harty Flemming, Joe and Mrs. Gartland, Fish Gilbert'19, Jack Giles'22, Max Goldberg, Harry Goodman, Manny Green, Paul Hanson, Dan Harvey, Bob Haskel, Munnie Hawes, Sumner Hayward, Jack Healy, Roy and Mrs. Hersum, George Hossfeld'48, Hal Hunter'20, Dug Jackson, Irv Jakobson, Mel Jenney, Andy

Jensen, Harold and Mrs. Johnston, Murray and Mrs. Jones and son, Malcolm, Joe Kaufman, Jack Kellar'22, Bill Kennedy, Al Kiley, Chick Knight, Chick and Mrs. Kurth, Moose LeFevre, Al Lloyd, Bill Loesch, Lou Mandel, Leo Mann, John Mattson, Ted McArn, Ed and Mrs. MacDonald, Dick McKay, Charlie Mackinnon, Don McGuire, Sandy McMorran, Bob Miller, Joe Morrell, Don Morse, Lew Moss, Harry Myers, Phil and Mrs. Nelles, Herb Nock, Warrie Norton, Abba Orlinger, Jack Parsons, Ernie Pauli, Leo and Mrs. Pelkus, Vic Phaneuf, George Pollock, Al Povah, Bill Ready, Herb and Mrs. Reinhard, Helier and Mrs. Rodriguez, Bill Rose, Harry and Mrs. Rosenfield, Fred Rowell, Jack Rule, Ray and Mrs. St. Laurent, Sumner Schein, George Schnitzler, Ed Schwarz, Rufe Shaw, Johnny and Mrs. Shepard, Bill and Mrs. Sherry and son, Bill, Jr., Saul and Mrs. Silverstein, Dick Spitz, Ted Steffian, Hank Stillman, Harold Stose, Bill Timbie, staff, Bill Wald, Al Wason'20, Bob Waterman, Scotty Wells'20, Joe and Mrs. Wenick, Dave Wheatland, Dinnie and Mrs. Whelan (and children, Anne, Elizabeth and Frank, Jr.), Jack Whipple, Charlie Williams, Jeff Wilson, Dick Windisch, Royal Wood, Ed Wyde, and Miles Zoller.

It is with deep sorrow that we report the passing of two members of the Class and extend sincere sympathy to their families. Missed by many who inquired for him at the reunion was Frederick Walter Binns of Needham, Mass., who died on June 9, 1951. Born in Roxbury, Mass., on August 6, 1898, he prepared for the Institute at Boston English High School and was graduated with us in Course X. At Technology, he was a member of the English High Club, the Chemical Society, and the Aero Society. He was an executive of the Virginia Smelting Company of Boston, with whom he had been associated since our graduation. Besides memberships in chemical and textile societies, he was a member of Mt. Vernon Royal Arch Chapter, Joseph Warren Commandery, and Aleppo Temple. He is survived by two sons, Frederick, Jr., and Lloyd A. Binns, and a step-daughter, Mrs. Dorothy S. Potter. We are indebted to Joe Gartland for aid in preparing these notes. Frank Jeremiah O'Neil of Lowell, Mass., President of the Lowell Shuttle Company, died on June 5, 1951. A lifelong resident of Lowell, he attended Lowell High School and was associated with us in Course II. He was a member of the Vesper Country Club, the Yorick Club, Lowell Lodge of Elks and the Holy Name Society. He is survived by his wife, Mrs. Evelyn Maine O'Neil; Two daughters, Janet, a student at Trinity College, and Maureen, a student at Notre Dame Academy; two sons, Francis of the U. S. Marine Corps, and John, a student at Keith Academy; a sister and two brothers. We also extend sympathy on behalf of the Class to Dugald C. Jackson, Jr., and his family on the passing of his illustrious father and our beloved teacher, Emeritus Professor Dugald C. Jackson, former Head of the Electrical Engineering Department at the Institute; to Maxwell K. Burckett of Maplewood, N.J., on the loss of his mother.

Arthur W. Skilling, manager of the Marketing Analysis Department of Socony-Vacuum Oil Company, New York, telephoned to say he had been unable to attend the reunion because of the graduation of his younger daughter, Susan, from Wellesley last June. Daughter Sarah, a Mt. Holyoke graduate, is married and has a year-old son. The Skillings make their home in Greenwich, Conn. Alfred B. Quinton, Jr., a major general and assistant to the Army Chief of Ordnance, was pictured in a recent news story accepting a new type of tank gun. Alan Osbourne of Washington has a note in the *Wall Street Journal* in defense of the technical education available to the armed forces. Albert L. Edson, former Army colonel and now manager of Boston's Logan International Airport, recently logged 3,300 hours in the air as a pilot during a flight over Boston, marking the 33d anniversary of his first solo flight in World War I. Homer N. Wallin, rear admiral and head of the Navy's Bureau of Ships, is reported in the news as being on an inspection tour of shipyard facilities. He distinguished himself after Pearl Harbor by quickly salvaging the major ships of the Pacific Fleet. The Reverend Samuel H. Miller, the fourth member of the clergy in the Class, is the minister of the Old Cambridge Baptist Church. Father Everett R. Harman is in Salt Lake City; the Reverend William F. Hastings has returned to New York from a pastorate in Puerto Rico; and the Reverend Williston Wirt, an Army chaplain and major during the war, is in California.

Among many other deviations from the engineering field in the Class, Bob Dolle is known throughout the country for his goldfish "farm" in Cincinnati; Reg Smithwick has international fame as a surgeon; and Robert R. Neyland, a brigadier general, is the head coach and director of athletics of the University of Tennessee, where he has coached the Volunteers football team during the last 25 years. Sports editors have heaped even more praise on him since the Vols defeated Texas in the Cotton Bowl last New Year's Day. Bob is a West Pointer who joined us in Course I after World War I service in France, and later returned to the Point as aide to the superintendent, then General Douglas MacArthur. Heavyweight champion at the Academy, still holder of its baseball pitching record, and a football letter man, he also coached at West Point until 1925, when he went to Tennessee and built up the football squad to a record of having been invited to play in every major bowl. Bob is credited with having trained some 200 current coaches, including top-notch'ers such as Hickman at Yale. Bob saw five years of service in World War II as division engineer in his native Texas, and overseas in command of all supply forces in the China-Burma-India theater. He has received the Distinguished Service Medal, the Legion of Merit with cluster, the rank of Officer in the Order of the British Empire, and the Chinese Order of Cloud and Banner.

Allen D. Addicks is with the Moore Publishing Company, New York City. Willard A. Emery has a new address in Tulsa, Okla. James Ford is now in Redondo Beach, Calif. J. Rowland

Hotchkin, President of the Palnut Company, has a new home in Short Hills, N. J. John A. Scott, of the General Electric Company, has a new home in Schenectady, N.Y. New addresses have also been received for Joseph H. Carr, Asher Z. Cohen, Commander Glenn H. Easton, Thomas L. Hughes, James H. Lawson, Donald B. Lovis, Major General Stanley L. Scott, Brigadier General Don C. Shingler, and Michael Treschow.

An article in the St. Paul, Minn., *Pioneer Press* announced the marriage on June 1, 1951, of Mrs. Agnes O. Gutterson and Harry M. Ramsey. The Ramseys now make their home at 2434 Beverly Road, St. Paul. Sumner Hayward has sent a clipping from the Ridgewood, N.J., *Sunday News* of August 5, announcing the engagement of Joan Greene, daughter of Mr. and Mrs. C. Doane Greene of New Rochelle, N.Y., to John V. Jones of Wyckoff, N. J. Joan is attending the University of Vermont and the Greene's son, Stephen, is at Lafayette. Judge is with the Kellex Corporation in New York City. The New York *Herald-Tribune* of September 2, announced the marriage of Marjorie L. Weeks and George F. B. Owens, Jr., an ensign in the Navy and the son of Mr. and Mrs. George F. B. Owens of Babylon, N.Y. George, Sr., a retired Navy commander, is assistant vice-president of the Brooklyn Union Gas Company. Sons of members of the Class who were graduated from Technology last June included Jim Cudworth's son, Allen, a graduate student; John M. Lee, son of John G. Lee; Jay Rosenfield, son of Harry Rosenfield; and Wilfred H. St. Laurent, Jr., nephew of Raymond A. St. Laurent. The Dean's List of undergraduate students with high scholastic standing includes the names of young St. Laurent, Robert M. Lurie'52, son of Mrs. Lurie and the late Joe Lurie and Richard F. Jenney'52, son of Mr. and Mrs. Melvin R. Jenney.

Edmund G. Farrand, our new class agent, has taken over the duties so ably handled by Lark Randall and we ask that you continue your generous support. Ed has retired as secretary and general manager of the United Conveyor Corporation, Chicago, and has purchased the Colonial Plantation, Route Number 2, Leesburg, Ga. Ed is an honorary secretary of M.I.T. and a former officer of the M.I.T. Club of Chicago. He and Mrs. Farrand and son, David, are devotees of riding, racing, jumping, and polo and will no doubt maintain their stable in the new location. John J. Winn, Jr., manager of the Petersburg and Hopewell Gas Company of Petersburg, Va., has returned to his old home of Portland, Ore., to be the manager of the Port of Portland. Jack is a former commercial manager of the Portland Gas and Coke Company and vice-president of the First National Bank of Portland. During World War II, he was a lieutenant colonel, Corps of Engineers, and received the Bronze Star and the Commendation Ribbon. He became general manager of the Honolulu Gas Company, Hawaii, in 1946, and went to Virginia in 1949.

John J. Healy, Jr., assistant general manager of the Merrimac Division, Monsanto Chemical Company, Everett, Mass., has been appointed assistant to the

vice-president in charge of research, development, and patent activities with headquarters in St. Louis, Mo. Jack joined the Merrimac Chemical Company in 1921 as a control chemist and transferred to research work until Monsanto acquired the company in 1929, when he was made assistant in technical service. He became director of development in 1935, and assistant general manager in 1947. He is a member of the American Chemical Society and former councilor and chairman of the Northeastern Section; a director and former chairman of the Boston Section of the American Institute of Chemical Engineers; the 1950 chairman of the New England Chapter, American Institute of Chemists; a member of the Society of Chemical Industry and the Engineering Societies of New England. He has written a large number of articles on scientific and operating phases of the chemical industry and has a number of patents on major processes. He is married and has no children. Edward M. Epstein, associated with Du Pont's rayon activities almost since the start 30 years ago, has been appointed manager of the quality control section of the nylon division. Ed had been engaged in technical and production work at the plants in Buffalo, Old Hickory, Tenn., Richmond, and Buenos Aires before becoming technical superintendent of Old Hickory in 1950. Robert F. Miller, whose headquarters are in the Pentagon Building, Washington, has written that he has moved his family from Rochester to a new home at 1107 Chestnut Avenue, Falls Church, Va.

May your Thanksgiving festivities be the more enjoyable with the feeling of satisfaction which comes from having answered Ed Farrand's first call for the Alumni Fund.—CAROLE A. CLARKE, Secretary, International Standard Trading Corporation, 67 Broad Street, New York 4, N.Y.

• 1923 •

At the class meeting held on the afternoon of June 11, Channing P. Clapp was appointed chairman of the Reunion Committee for our 30th reunion in 1953. Chan's address is 210 Main Street, Mattawan, N.J., for members having ideas or wishing to help. Dave Skinner reported that he was still negotiating with the Sheldon House at Pine Orchard, Conn., as a reunion spot for the dates, June 12, 13, 14, 1953.

I counted 32 members of the Class who showed up at either the Alumni Day events at the Institute, including the luncheon, or at the class party or alumni dinner at the Copley Plaza. At some of these events the following were accompanied by their respective wives: Horatio Bond, John E. Burchard, Channing P. Clapp, Winthrop G. Dow, Franklin K. Haven, Harry Kalker, James A. Penney-packer, Angelos A. Spiliros, Royal Sterling, Allard M. Valentine. The others present included Theon G. Adams, Benjamin Albert, Alan R. Allen, Ronald D. Brown, Philip L. Coleman, Charles A. Geisinger, Harold B. Golding, E. Louis Greenblatt, William B. Greenough, Jr., Frank F. Hobson, Wentworth T. Howland, George A. Johnson, Forrest F. Lange, Howard A.

Lockhart, Bernard E. Proctor, Howard F. Russell, Edward R. Schwarz, Horatio C. Sexton, David W. Skinner, Julius A. Stratton, Lyman L. Tremaine, Roy C. Wagner, and John H. Zimmerman. President Robert P. Shaw was present, accompanied by "Pappy." There may have been some present I missed.

I was pleased to have an invitation to the wedding of the daughter of Bernardo Elosua, Maria del Carmen, on June 30 in Monterrey, Nuevo Leon, Mexico.—William Webster has been serving for the last 16 months as chairman of the Research and Development Board of the U.S. Department of Defense. In July, he returned to his position in Boston as executive vice-president of the New England Electric System. From 1944 to 1948, Charles E. Mongan, Jr., has been a member of the staff of the Marine Physics Laboratory of the University of California at San Diego and more recently was a physicist at the Pacific Division of the Bendix Aviation Corporation. In May, he joined the engineering staff of the Edo Corporation, College Point, N.Y., where he will serve as special assistant to the vice-president in charge of engineering. Edo is a major producer of sonar equipment for the Navy.

J. W. Voelcker has been with the English Equipment Company, Ltd., since graduation, except for a wartime tour of duty with the Royal Engineers. In August, he was appointed secretary of the City and Guilds of London Institute at Gresham College, London. He represents the City and Guilds of London Institute on the governing bodies of three technical colleges and is president of the M.I.T. Club of Great Britain. The club was host, at the summer meeting, to President Killian and Mrs. Killian; and, more recently, they have had a visit from H. E. Lobdell'17, Executive Vice-president of the Alumni Association. Jack Keck has been handicapped by deafness, resulting from an injury in 1940, and other disabilities. He had the good news to report in June that after six months in the hospital last year the doctors gave him a green light to go ahead. The result is that he has taken a job with a firm in his home town, Torrington, Conn., doing general work on standardizing production methods and price schedules. Charles H. Ducoté is a member of the U.S. Foreign Service. He has had assignments since 1943 in Paris, Brussels, and Budapest. Most recently, he has been appointed principal officer and U.S. consul general at Tananarive, Madagascar. He reports he made a plane trip from Paris to Madagascar fairly rapidly, going by way of Geneva, Rome, Naples, Cairo, and Nairobi. The Boston *Herald* of September 6 contained the announcement of the engagement of his daughter, Consuelo Gabrielle Ducoté, to Midshipman William Gibbs Lykes of the U.S. Naval Academy. Miss Ducoté is completing her senior year at Marymount College. David W. Skinner, general manufacturing manager of Polaroid Corporation in Cambridge, was elected vice-president of the company at the July meeting of the board of directors. Samuel M. Hamill, Jr., was named vice-president of the Cincinnati Gas and Electric Company at the annual meeting of the stockholders in April.

D. G. Brinton Thompson, in June, was named Northam Professor of History and chairman of the department of history at Trinity College, Hartford, Conn. On September 12, the New England Waterworks Association elected Frederick O. A. Almquist of Hartford president. Fred is principal sanitary engineer of the Connecticut State Department of Health.

It is inevitable that personal notes should include some death notices. I heard, for example, from Herb Hayden that during July he had taken a vacation to the West Coast, during which he had a pleasant visit with Clarence Row and he also telephoned Frosty Harmon and Bill Stewart. In August, he had a letter from Mrs. Row reporting that Clarence had passed away on August 2. In addition to his wife, Row leaves two sons and a daughter, all of whom live in Pasadena, Calif. Clarence Row has been the owner of the Row Construction Company, active in the Los Angeles area, for approximately 25 years. — Colonel Joseph D. Arthur, Jr., was one-time assistant engineer commissioner of the District of Columbia. He died at the Walter Reed Hospital on May 31. He is survived by his widow, Mrs. Sarah M. Arthur of Hillsboro, N.C., a daughter, and three sons. John R. Decker died on June 19 at Wilton, Maine. He is survived by his widow, a son, and two grandchildren. Albert A. Kenney, for many years Boston representative of the Chicago Bridge and Iron Works, died at Rockland, Mass., June 4, 1950. Abe was well known to Course I graduates. — HORATIO L. BOND Secretary, National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass. HOWARD F. RUSSELL, Assistant Secretary, Improved Risk Mutuals, South Broadway, White Plains, N.Y.

• 1924 •

Some day when I get around to it Ed Wininger is going to get a nice prize, or maybe a certificate of merit suitable for framing. Remember last July when I asked you all to put me on your picture post card mailing list this summer? Some of you did in a one-shot manner, but Ed really came through. Added to my collection in the card rack hanging on the wall is a beautiful picture of Mission Mountains in Montana ("we're building a big chemical plant near here"), a charming shot of the Palmer House ("should be Indiana Harbor, our job is there with Youngstown Sheet and Tube"), and, of all things, the golden dome of the Boston State House ("attending Prestressed Concrete Conference at M.I.T. Why don't you stay in your office!"). Ed, as you can see, works out of New York, not in it.

Bill MacCallum, the telephone company's best customer, called from New York, just reporting in to say there was nothing new or startling on the West Coast. Which, I suppose, is news itself in a way. Matt Nash stopped in one day, back home on vacation. Matt has charge of both gas and electric distribution for Central Hudson in Poughkeepsie. And not long ago Bert Donkersley showed up, on the hunt for bright young men to keep Grinnell's sprinkler systems sprinkling. Early in the summer Bill Ridge dropped by. He is still with Roebling Sons in New

Jersey, the outfit whose fame is built on bridges but whose income comes from cable. — This summer Harold Hazen had a unique experience. At the request of the Supreme Commander, Allied Powers, an Engineering Education Mission was sent to Japan to discuss problems of mutual interest in that field. And Harold was chosen to head the group. In the club notes section is a report from the Tokyo Club which indicates that not all their time was spent in learned discourse.

"Dunkirk: Miracle or Blunder?" is the provocative title of an article by Colonel George C. Reinhardt, Civil Engineers, U. S. Army, in a recent issue of the U. S. Naval Institute Proceedings. Scoops evidently did a very thorough job of research, and his conclusions were that the escape, heroic as it was, was no miracle. A German blunder in not using heavy armor and the Luftwaffe's inability to adapt its tactics to an unexpected situation were mainly responsible, he believes.

We know those of you who haven't heard will be saddened to learn of the death of William H. Manning in Pontiac, Michigan. With General Motors since graduation in 1924, Shorty was technical assistant to vice-president C. R. Osborn at the time of his death in August. He held a number of patents in the automobile field, and many years ago developed the first Buick counterweighted and balanced crankshaft. In addition to Mrs. Manning, Shorty leaves three children. We have lost a valued and respected classmate. — A note from his widow informs us that Samuel Schneider was killed in March of this year. No details are known to us. Sam, a chemical engineer, was with us all four years. For the past 12 years he had been employed in the City of New York Comptroller's Office.

Been quite a while since Alumni Day, but this is the first chance we've had to report on it. There were 21 of us there, with a goodly number of wives in addition. A gala predinner get-together was held in the Schooler suite. The Schoolers were a bit late in arriving and found the party well under way when they did show up. Not the least daunted by the sight of their room, they took the whole thing in stride. The Cardinals and the Athertons had just come from graduation exercises of some of the respective progeny. Bill MacCallum was there, on one of his usual transcontinental tours. Wink Quarles and George Parker poured.

No babies to start the year off with this time, as we did last year. But we do have a number of business promotions to note. In June came the announcement that S. Floyd Stewart, former president and general manager of the Leece-Neville Company in Cleveland, had taken over as executive vice-president of the Arma Corporation of Brooklyn, an American Bosch subsidiary. And in July we learned that Vincent E. Lysaght had been appointed sales manager of the Helicoid Gage Division, American Chain and Cable Company. Prior to that time, Vin had the same post with two other divisions. Sargent Heath, purchasing agent of the Bell Company in Worcester for years, has been raised to the post of assistant treasurer. The Dampney Company of America,

"Maintenance for Metal," has announced the promotion of Lachlan W. MacLean, formerly manager, Boston sales territory, to the newly-created post of vice president in charge of manufacturing and engineering. To all, our heartiest congratulations.

It's Dr. Hanley now, please. At Duquesne's commencement this year Ed was awarded the honorary doctor of science degree. The man of iron also delivered the commencement address, title not given. In May, Donald B. Mason of Westport, Conn., was married to Helen Budd. Don is chemical engineer and technical director of Freeport Sulphur; the former Miss Budd is home economist and household equipment editor of Macfadden Publications. He had the novel and pleasant experience of having for best man his son, Jeremy. — After a period of hibernation caused by the major effort of the Development Program, the annual Alumni Fund is once more back in business. As class agent, Frank Shaw heads up the '24 participation. He's had a long vacation, but he will be a very happy man if we just swamp him. How about it? — HENRY B. KANE, General Secretary, Room 1-272, M.I.T., Cambridge 39, Mass.

• 1925 •

In starting the new season, your Secretary finds many interesting items concerning members of the Class. It is hoped that you will continue to keep him supplied with notes throughout the year so that '25 may keep itself in the columns of The Review. First, a report on Alumni Day, which now seems very far in the past. For an off-year, the Class was very well represented. We had a room at the Copley Plaza before the banquet and for two hours the following people seemed to have a most enjoyable time: William R. Blair, Samuel H., and Mrs. Caldwell, Henry Cunningham, Nelson H. DeFoe, Garfield Drew, F. Leroy Foster, Robert and Mrs. Hodson, James H. Howard, Edwin E. Kussmaul, Mac Levine, Henry F. McKenna, Edward D. McLaughlin, Edward D. Murphy, Avery H. Stanton, Henry C. Trask, Francis J. Turnbull, James G. Walker '26, and Walter N. Westland. Tom Price, IX-B, was not here for the Alumni Day festivities but was in Cambridge a few days earlier attending conferences of Sloan Fellows in the Department of Business and Engineering Administration and combined this trip with the opportunity to take his son back to Erie, Pa., for the summer vacation period.

Just prior to Alumni Day, I received an interesting letter from George Blonsky, III. George resigned his position with the Mudd Mining Company last January and is now associated with the Southwestern Engineering Company of Los Angeles, designers and builders of metallurgical plants. Charlotte, his wife, tells me that George is working very hard but apparently enjoying his new position. As many of you may know, George has been carrying on a rather intensive prospecting program of his own for a number of years, and present indications are that his mining activities are about to bear some fruit. He and his partner have taken a lease on a small tungsten operation in Arizona

which they are in the process of preparing for full production. Harold G. Young, Class of '24, and a good friend of George's, was here for Alumni Day and I had hoped to get more details on the Blonsky mining venture from him. Unfortunately, we were able to get together only for a couple of minutes at the Alumni Banquet.

Ave Stanton's request for class dues not only helped build up the 1925 treasury but brought in notes from a number of members of the Class. Milt Salzman wrote several months ago stating that he is still in hydraulic engineering in New York with Ebasco Services, Inc. His company builds hydro and steam plants all over the United States and in foreign countries. Milt states he has not made much money but has had lots of fun and has seen a lot of the world. At the time of the writing, he was prepared to fly to Greece to look over a project. He has served as chairman of the power division of the American Society of Civil Engineers and attends most of their conventions, including one in Mexico City and one in Toronto last year. He has a daughter who is a junior at Adelphi College and a son entering M.I.T. this fall.

There have been a number of promotions to members of the Class during the past few months and it is our pleasure to offer congratulations to the following: Maurice T. Freeman, XV, who has been elected president of the Loomis-Sayles Mutual Fund, Inc., and the Loomis-Sayles Second Fund, Inc. Maurice is a member of the executive committee and vice-president of Loomis, Sayles and Company, manager of these two investment trusts. Robert E. Huthsteiner, II, has been named president of the Cummins Engine Company, after serving for a number of years as vice-president, general manager, and director. Frank H. Riegel has been made advertising manager of the Washburn Company in Worcester, Mass. Frank will supervise all advertising and sales promotion from the Worcester office and the branches in Rockford, Illinois, and Niles, Mich. He joined the sales department of the Washburn Company in 1942, after having been with the McGraw-Hill Publishing Company, Stevens-Walden Company, and the Wickwire Spencer Steel Company. He lives in Leicester where he is a director of the Lions Club and is also a member of the Leicester Cribbage Club and the Worcester M.I.T. Club. A clipping from the Pittsburgh, Pa., *Press* notes that Alan W. Crowell, XV, sales manager of the Zippo Manufacturing Company, of Bradford, Pa., addressed the Sales Executive Club of Pittsburgh early in June on the subject, "Building a New Field Organization."

The Boston Sunday Post on August 5 carried an interesting news article concerning Tom Storie, X, who has established some sort of a record during the past 20 years in walking more than 15,000 miles of hard pavement in cities throughout the country. His hobby is city walking. In 20 years he figures he has walked every block of every street of every borough of New York City, including dead ends, which adds up to 5,717 miles. The following is quoted from the newspaper article: "By carefully planning his week

ends and vacations, he also has walked every street of Yonkers, N. Y. and Wilmington, Del., and the principal streets of Philadelphia, Pittsburgh, Boston, Chicago, Baltimore, Washington, Denver, Atlanta, Richmond, New Haven, Toledo, St. Louis, Newark, Detroit, Providence, Jersey City and Cambridge and Somerville, Mass. He has done some walking in all but 10 of the 97 cities in the U. S. with a population over 100,000. He and his wife, who goes along on most of his walks, hope to hit the other 10 on future vacations. . . . Recently the Stories have begun to internationalize their hobby. They flew to Bermuda last summer and walked 85 of the 104 miles of streets there and would have finished except the sun was too hot. This summer they flew to Europe and added to their pedestrian mileage in central London, Glasgow, Edinburgh and Paris. Like so many before them, they found that walking in London demands a lot of concentration by an American because of the driving on the left side of the street. Paris, they said, is beautiful to see, but confusing and noisy for a pedestrian. In all their years of walking, the Stories have never been held up or had a serious accident. The Stories live in New York and ride to work every day. Mrs. Storie is a librarian at Columbia University and gets some professional walking in among the book stacks. Her husband's job is more sedentary. He is a civilian civil engineer with the coast guard. 'I've always been an inveterate sightseer,' he says. 'The best way to know a town is to walk through it. In two years I covered all the principal streets of Boston. I spent so much time walking I barely got through M.I.T.' He was married in St. Louis in 1928. Mrs. Storie gradually learned to share his love of walking. They did a thorough job on St. Louis. In 1930, when their work took them to Philadelphia, they covered 800 miles there in the next year and a half. Then they came to New York."

As might be expected, Atomic Energy Commission's new general manager, Marion W. Boyer, X, makes the news quite often. In one of his most recent newspaper interviews, he has stated that familiarity does not breed contempt when it comes to the atomic bomb. He has now been exposed to all the secrets and states he is a lot more impressed by the bomb and the revolutionary possibilities of atomic energy than he was before assuming his present responsibilities. He has now visited most of the A.E.C. installations around the country and is favorably impressed by the way they are being run. He explains that his is strictly a production job, as opposed to a policy job which is handled by the members of the Commission. He sees little difficulty in increasing production and expanding the whole operation under present plans and is calmly confident that all goals will be met. As might be expected, he is quite impressed by the difference in working for a big private company and working for a big government agency.

We are sorry to announce that John Boies Tileston, XV, son of Roger and Regina Gordon Tileston, died suddenly in the Florida Keys, on June 23. He was

born in Jamaica Plain in 1906. For over 20 years he lived on Ashcroft Road, Sharon, Mass. He has lived in Florida for several years. Prior to that he ran tea rooms in Boston and Gloucester. He attended Sharon High School, Dummer Academy, and M.I.T. He is survived by his wife, Sarah Chandler Stanton Tileston, and three children.

I think many of you will be interested in the following story which appeared in the Worcester Sunday *Telegram* on August 19. "Mr. and Mrs. Ralph F. Gow and their son and daughter returned last Sunday from a two-month European trip which combined business and pleasure. Mr. Gow, a vice-president of Norton Company, visited various Norton plants abroad, and his family accompanied him on the trip. Robert H. Gow was graduated from Groton School in June and will enter Yale University next month. The Gows' daughter, Barbara, will leave in September to attend the Ethel Walker School in Simsbury, Connecticut. The Gows traveled in France, Belgium, Holland, Germany, Switzerland and Italy. From Milan in Italy they went by plane to London. After some sight-seeing there they drove by car from London to Stratford and up to Liverpool, where they sailed for the return trip to the United States. Mr. and Mrs. Gow lived in Paris for five years when Mr. Gow was with the Norton Company plant there, and they have traveled previously to other European units of the company, so they had a chance to renew old acquaintances on this summer's trip. The Gows found both Paris and London particularly gay, with London observing the Festival of Britain and Paris celebrating its 2,000th anniversary. Mrs. Gow said that Paris looked especially beautiful at night, with special illumination on such famous landmarks as the Arc de Triomphe and Notre Dame Cathedral and some of the art masterpieces in the Louvre Museum. They saw an impressive performance of Shakespeare's *Henry V* in the town of his birth, Stratford on Avon in England, and they said that the London theater season was a brilliant one, with many modern plays open as well as the famous Gilbert and Sullivan productions. Several of the events they saw reproduced the pageantry of medieval England, such as the presentation of various units of the British guards at Whitehall, including Scots Guards and the Buckingham Palace Guards."

Congratulations are in order for George H. Fuller, X, who, on April 10 completed 25 years of service with the division of Lever Brothers Company and becomes a member of the Quarter Century Club. He began his career in 1926 as production chemist for a subsidiary of Harriet Hubbard Ayer, and moved in 1929 to the position of chief chemist for the parent company. An expert in the intricate compounding of quality perfumes, he is credited with many improvements and innovations in manufacture of creams, lotions, powders, perfumes, and toilet waters. Hearty congratulations are also in order for Mr. and Mrs. George N. McDaniel who, on July 11, announced the arrival of Marc Davies McDaniel, five pounds, 13 ounces.

I must not fail to mention a very pleasant visit I had from Tony Lauria, II, and his son a few weeks ago. He is still with Sears, Roebuck and Company in Chicago and does a great deal of traveling. Hence, when he set out on vacation this year he took to the road and was in Cambridge for only a short period. — F. LEROY FOSTER, Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

• 1926 •

Greetings! Salutations! and it sure was a G-R-E-A-T reunion! For once your Secretary has no comment to make about lack of material for these notes. As a matter of fact, it appears that a couple of years hence we may catch up with the deluge. If the weatherman had not produced a three-day nor'easter here at Cape Ann for Labor Day week end, this issue would probably never have been whipped together. This is especially likely since last week we purchased the season's winning racing sloop of the local O-Class boats. We had entertained big plans for these final days of the racing series in competition with Pete Doelger, who acquired a boat last summer. With high winds, high seas, and plenty of rain, we are sticking close to a glowing fire on the hearth. Having given quite a build-up for our reunion in this column, we are particularly happy that the whole affair not only met expectations, but went far beyond. Proof of this was the turnout, which made an all-time record — it being axiomatic that attendance marks the success of a reunion. There were 171 of the Class who came to the reunion at the Hotel Griswold, Groton, Conn., and 13 others attended Alumni Day at the Institute, making a total of 184. Before going further, let's give a cheer to the reunion chairman, Al Dolben, for a well-planned affair and to his hard-working committee composed of Herb Beckwith, Fred Broughton, Don Cunningham, Jack Larkin, Joe Levis, Bill Meehan, Pink Salmon, Cedric Valentine, Abe White, and Bud Wilbur. We hope that Jack Larkin's secretary did not quit because of the deluge of work caused by our reunion, but the superb handling of detail by Jack assured a smooth-running affair. In the advance notices it was mentioned that those who wished could arrive on Friday night, but no one guessed that 80 of the boys would do so. It was a wonderful gesture on the part of the Class, and those who did arrive early had just that much better time because it made possible more individual get-togethers.

As we mentioned in an earlier issue, the real enjoyment in a reunion is that of meeting old friends and this time a great many men came who had never before attended a reunion. In 25 years, most of us have made a great many new acquaintances and friends but there never can be a substitute for old friends. This was proven again and again by the expressions on the faces at Groton and Cambridge. Not that we think you will be able to see such expressions in a photograph, but for the benefit of those who could not make the reunion we will tell you how to obtain a copy of a class picture taken at Groton. With a group as large as ours,

it is impossible to get everyone together at one time, but we did pretty well by getting 141. The Metropolitan Photo Service of 739 Boylston Street, Boston 16, Mass., made the photograph, and anyone who wishes a copy may obtain it by sending them \$1.25 and specifying the M.I.T. Class of '26 reunion at Groton, Conn., June 9th. There is a number beside each man in the photograph and the following list gives everyone's name with the number for identification purposes. If there are any mistakes, blame your Secretary. Here we go. **List 1, Front Row:** 1-Rustizky, Solomon; 2-Doelger, W. E. P.; 3-Vaughan, W. E.; 4-Cramton, F. N.; 5-Smith, R. E.; 6-Hemeon, W. C. L.; 7-Green, A. D.; 8-Houghton, J. Y.; 9-Taylor, D. K.; 10-Humphreville, B. T.; 11-McHugh, C. P.; 12-Killian, J. R. Jr.; 13-Lissner, E. deW.; 14-Shepard, D. A.; 15-Morgan, M. B.; 16-Perry, S. S.; 17-Randall, L. S.; 18-Washburn, F. E.; 19-Parsons, D. L.; 20-Baylor, S. H.; 21-Milem, C. R. **Second Row:** 22-Goldberg, J. B.; 23-McCulloch, C. E.; 24-Rich, Charles; 25-Hopkins, G. E.; 26-Everett, C. J.; 27-Owen, T. W.; 28-Mangelsdorf, T. A.; 29-Biehle, J. T.; 30-Broughton, F. P.; 31-Gohr, E. J.; 32-Callahan, W. H.; 33-Offutt, J. S.; 34-Chase, D. C.; 35-Criswell, W. W.; 36-Lee, R. S. M.; 37-Pickett, C. M. Jr.; 39-Latham, W. H.; 39-Lowell, W. P. Jr.; 40-Bergen, M. J.; 41-Apel, G. E.; 42-Bassett, A. B.; 43-Peterson, G. R.; 44-Oakley, J. R.; 45-Richardson, B. P.; 46-Conly, R. W.; **Third Row:** 47-Murray, I. L.; 48-Smith, G. W.; 49-Lobo, W. E.; 50-Mahoney, P. L.; 51-Entwistle, A. L.; 52-Grossman, M. L.; 53-Hope, E. S.; 54-Ruggles, H. C.; 55-Rogers, R. W.; 56-Bidwell, E. N.; 57-Head, R. W.; 58-Lamoureux, A. C.; 59-Cheney, Stanley; 60-Warner, J. P.; 61-Dean, R. C.; 62-Chase, E. A.; 63-Searles, J. W.; 64-Freeman, R. A.; 65-Brooks, S. W.; 66-Howard, H. F.; 67-Libbey, A. P.; 68-Cabrenas, A. P.; 69-Gruzen, B. S.; 70-Lord, K. S.; 71-Ryan, H. J.; 72-Mancini, P. S.; 73-Margolin, Benjamin; 74-Bianchi, C. A.; 75-Kelly, E. B.; **Fourth Row:** 76-Powers, D. B.; 77-Wheeler, E. C.; 78-White, Abraham; 79-Wood, E. J.; 80-Staples, E. E.; 81-Buckley, C. F.; 82-Wiessner, O. B.; 83-Whiting, Richard; 84-Lambert, B. P.; 85-French, A. W., Jr.; 86-Kelly, I. A.; 87-Darmstadt, L. J.; 88-Sessions, W. C.; 89-Hird, M. S.; 90-Faithfull, G. E.; 91-Sawyer, S. D.; 92-Drum, John; 93-Wilbur, J. B.; 94-Brookes, A. S.; 95-Valentine, Cedric; 96-Mancha, Raymond; 97-Underwood, A. F.; 98-Chidsey, R. S.; 99-Gass, A. W.; 100-Knight, A. F.; 101-Spitzer, E. E.; 102-Gada, Natale; 103-Clarke, A. G.; 104-Leness, G. J.; 105-Vosper, W. R.; 106-Barry, C. H.; 107-Sherwood, R. W.; 108-Walter, Martin; 109-Doolittle, E. J. **Fifth Row:** 110-Meehan, William; 111-Bristol, R. A.; 112-Spence, J. W.; 113-Bete, R. T.; 114-Johnson, R. W.; 115-Carter, W. E.; 116-Salmon, I. C.; 117-Cunningham, D. S.; 118-Smith, R. E.; 119-Dawes, R. T.; 120-Haskell, E. B.; 121-Gates, A. M.; 122-Frisbie, G. S.; 123-Chaudruc, J. E.; 124-Roberts, E. N.; 125-Forrester, W. A. Jr. **Top Row:** 126-Levis, J. L.; 127-Nason, H. E.; 128-Welch, D. G.; 129-West, G. A.; 130-Olander, C. H.; 131-Russell, W. H.;

132-Taylor, Flint; 133-Rivers, W. F.; 134-Dow, M. C.; 135-Hamilton, W. L.; 136-Plummer, R. W.; 137-Greer, M. M.; 138-Schreiner, F. W.; 139-Toperzer, F. M.; 140-Howe, B. V.; 141-Thompson, C. M. **List 2, At Groton but Not in Photo:** Arellano, C. V.; Beckwith, H. L.; Breck, G. W.; Campbell, W. E.; Carlisle, R. W.; Constantine, B. G.; Dolben, A. H.; Eddy, E. W.; Elmendorf, D. E.; Green, T. D.; Hamblet, G. W., Jr.; Hamilton, W. H.; Harrison, C. A.; Heyser, A. S.; Hill, N. C.; Huckman, E. R.; Kennedy, J. L.; King, D. B.; Larkin, J. P.; Lucas, L. M. '27; Lobdell, H. E. '17; McMahon, E. C.; Perdew, N. W.; Radostovich, M. L.; Royer, M. G.; Snow, C. W.; Spear, R. G.; Sutter, D. M.; Ward, F. P.; Wardner, G. W.; Zendzian, F. V. **List 3, Alumni Day Only:** Blake, R. F.; Briggs, R. L.; Cumming, L. G.; DeAmicis, D. S.; Draper, C. S.; Dunnell, W. W., Jr.; Goldberg, L. J.; Graves, W. H., Jr.; Homsey, S. E.; Humphrey, Howard S.; LeBel, C. J.; Strickland, F. E.; Sziklas, Endre.

It is becoming evident as this gets down on paper that right away quick I've got to start hitting the high spots or there won't be room for any class notes other than '26. So, what did we do at the reunion? Well, the Class of '26 has always made its own fun and entertainment and our 25th was no exception. We mentioned above that those who arrived Friday evening spent the evening (and most of the night) just visiting. Suffice it to say that much soda water and many ice cubes were consumed. The bull sessions moved from one room to another all evening long and the boys sitting on the beds, leaning against the walls, and draped over the chairs created an atmosphere of a dormitory or fraternity house. We managed with a flash gun to get a number of interesting Kodachrome shots during the evening. We looked at them on the screen the other night and the slides are proof that the evening was successful. Your Secretary had the misfortune of drawing the room next to Ray Mancha and Wes Hemeon. Ray decided to practice on his banjo for his Saturday-night performance with Dave Shepard and Wes operated a wire recorder. As a result, when Ray became exhausted, Wes turned on the wire recorder and played back the Mancha performance, and so it went far into the night.

Saturday morning the boys really began pouring in by land, sea, and air. *The Griswold* has its own dock so Herb Beckwith came by sea and Austin Kelly also brought his craft around. Both were handsome sailing vessels. The long distance championship was in the bag. Bill Rivers, of course, had it signed and sealed before he left Calcutta. Bill also was the champ for all classes and took a bow at the Alumni Day Banquet. Bull Roberts came up from Chile, and Carlos Arellano and Dick Plummer made it from Mexico City. Within the borders, Bruce Powers seems to take the honors having come in from Los Angeles but Frank Strickland showed up from Seattle on Alumni Day and he drove! Bill Hamilton and Ben Howe came from Denver; Prince Warner from Baton Rouge; and Bob Sherwood, with cowboy hat, all the way from Texas. Fred Walch

sent a cable from Paris extending his best wishes and regrets for not being a long distance swimmer. You can see that the boys really made an effort to get together. By noon the majority had come in and while we were eating lunch a rousing cheer signified that Jim Killian had arrived. During the most pressing time of his year, Jim fortunately was able to join us and was able to try out his flossy new stereoscopic camera.

One event interested your Secretary most and, consequently, the reports on other events may be sketchy. The outstanding event always has been and always will be the ball game. This year it was between the "baldies" and the "hairies," and when we left the argument about who won, the game was still going strong. We picked up some score cards which seem to require interpretation and interpolation. For instance, the quoits card indicated that Joe Levis was the winner with Bill Latham runner-up. When we look back to the second round and see that Dave Shepard lost to Mary Martin who in turn lost to Joe Levis, we are inclined to question Joe's title. The tennis courts, however, were in full view, and when we note on the card that Bean Lambert won the most games with Herb Beckwith runner-up, it sounds reasonable. When we note that Pink Salmon won the least games, it sounds even more reasonable. Deke Taylor seems to have won the diving championship by default. No one else entered. Joe Houghton and Jim Offutt were the ping-pong finalists but were too exhausted for the play-off. Don Chase was the undisputed shuffleboard expert. The golfers' scores have already been lost, which probably is not going to hurt the feelings of most of them. We do recall, however, that the golfers, good and bad, did all right when it came to prizes donated by Louis Darmstadt and other members of the Class. Charlie Snow and Dick Johnson did particularly well, we recall. However, Dick later outdid himself in the baseball game and finished with a sprained arm — the only athletic casualty of the reunion.

The evening entertainment was, as usual, an all-'26 show headlined by Ray Mancha and Dave Shepard in their banjo duets, but this time with Dick Whiting accompanying them on the base drum. We mentioned above that Ray had been practicing in his room adjoining ours on the previous night, but the prize story is that Ray and Dave practiced for months together, via wire recorder. The results were phenomenal; the boys were actually better than 25 years ago! By the way, you will recall that Ray had everyone speak into his wire recorder upon leaving the dining room. He has checked and finds that a disc record can be made of this class recording if enough are interested. It would include the Mancha-Shepard duets and would cost about five dollars. I believe Ray said it would require 100 impressions to make the project practical. Therefore, if any of you are interested, drop a note to your Class Secretary, and we will get organized. After many encores, the Mancha-Shepard act finally gave way to the Bird Kelly performance. Bird, who is a combination of Will Rogers, Bob Hope, and Sid Stone, has added

many original and witty variations to his act and ends up with one fundamental orifice, a kind of disappearing act. The balance of the formal program was our usual picture show. The class movies and slides have really accumulated and now include some very interesting and, shall we say, incriminating shots. At least it was nearly midnight when we finished looking at them. Benny Margolin seems to have become the official movie photographer for the Class and he was going strong this time.

When talking about athletic events, we forgot to mention that Deke Taylor and Al Lamoreux have been disputing first place for family size. The truth came out that each has six children. However, Maurice Royer arrived from Quebec City late Saturday afternoon and put them out of the running; he has seven. Does anyone else want to enter the contest? Phil Mancini won the baby carriage donated by Roger Smith for having the youngest child, so Phil is right in there pitching. If there are any new entries, please send them to the Secretary.

Chronologically, we should have mentioned commencement before reporting on the reunion but we couldn't wait to give you the reunion story. Commencement took place on Friday morning, and since it is a custom to have the officers of the 25-year class take part in the academic procession, Pink Salmon and I did the honors. Our class president, Dave Shepard, had an important meeting which kept him from joining us. We were supplied with caps and gowns (doctor's outfits, no less) along with the 50-year class, all of whose members were marching. While robing, a couple of members of the Class of 1901 came up with outstretched hands and said that they did not seem to remember me. I gave them my name and then, with knowing looks, they said: "Oh, yes, we remember you now, but you have kept your youth remarkably well." With tongue in cheek, I agreed and refrained from mentioning that I was not born until three years after they graduated. I guess that's what gray hair does for a feller. Our honored guest at the reunion, Alumni Executive Vice-President, H. E. Lobdell '17, has no such difficulty. As a matter of fact he was accepted without question by the hotel as a member of our Class. But getting back to commencement. Pink and I had the honor and pleasure of seeing the sons of three classmates receive their degrees. Bill Lowell, Elton Staples, and Ted Mangelsdorf really were proud fathers as their respective sons were handed sheepskins by Dr. Compton, and we were proud, too, as they walked by. The crowning event of Alumni Day was the masterful presentation of our class gift to Dr. Compton by Dave Shepard. The gift, which amounted to \$152,697.44, was even beyond our expectations. The size of the gift was, of course, enhanced by your contributions to the Development Program, which was geared into our class gift by its timing. However, the backbone of the gift represented many years of devoted effort by Eben Haskell who, practically singlehanded, was responsible for raising the \$64,694 amount which was exclusive of the Development Program. Our hats are

all off to Eben for the successful completion of this job for which all of us share the glory.

There have been many promotions and much limelight for '26 men, and that news will come in our next issue. Also, we will soon start publishing the thumbnail sketches which so many of you sent to us after reunion. We suggest that you acquire a scrapbook in which to paste the class notes from now on, and in that way acquire a who's who for the Class. If the current notes do not take too much space, we will start this in the next issue, but no later than January in any event. With best wishes for a happy Thanksgiving. — GEORGE WARREN SMITH, General Secretary, E. I. du Pont De Nemours and Company, Room 1420, 140 Federal Street, Boston, Mass.

• 1927 •

During the summer the New York Sunday News carried a picture of D. Anson Rosenthal together with other thousand-dollar angels who are backing a forthcoming Broadway show.

The following members of our Class registered on Alumni Day, June 11, 1951: Dwight C. Arnold, Alf K. Berle, Joseph C. Burley, Elwood A. Church, Arthur J. Connell, Harold E. Edgerton, John H. Harding, Frederick H. Kienle, Frank Marcucella, Hector A. Moineau, and Ezra F. Stevens. E. Warren Ward is beginning his first year on the Framingham Massachusetts Planning Board. He has lived in Framingham for 19 years. The Engineering Societies of New England have elected Philip N. Rugg as president for the current year. Lee McCanne is a member of the Citizens Committee which has recommended a county-wide sales tax. He is a vice-president of the Stromberg Carlson Company and former president (1950) of the Rochester Chamber of Commerce.

As we reported to you in the June notes, Mary L. Talbot became the bride of Richard Pratt Hawkins and they are now living at 15 Cottage Street, Hingham, Mass. Captain Leslie A. Kniskern, commander of the Philadelphia Naval Shipyard, has been promoted to the rank of rear admiral. A recent article in the Woonsocket, R.I., *Call*, entitled "Wrentham Personalities," gave a very detailed history of E. May Bixby, who was appointed to the Wrentham State School for handicapped children as a result of a civil service examination. Here, in 1936, she helped open the laboratory which has now become one of the best in the state.

"Chief Engineer for the \$26,450,000 hydroelectric project to be built on the Lewis River in Oregon by Pacific Power & Light Co. will be E. Robert de Luccia, who has been selected by Paul B. McKee, president of Pacific Power. This project is expected to be completed by Fall of 1952." — We are grateful to E. H. Bramhall for the following account of his recent activities: "With respect to my activities in Germany I fear there is not much of general interest that I can say. However, I would appreciate hearing from M.I.T. friends who are not familiar with my formidable new address — State Depart-

ment Military Security Board, HICOG, APO 757, in care of Postmaster, New York, N.Y."

George E. Onishi has promised to drop in to see me when he is in New York late this month for a meeting of the Coordinating Research Council, which is a part of the Society of Automotive Engineers. Larry Cheney's new address is 22 Nimitz Place, Old Greenwich, Conn. He has given us the following account of his recent transfer to New York. "The reason for the change in location is because I have been transferred to the New York office of the U. S. Rubber Company after serving four years as the plant engineer at their Milan, Tenn., plant. I will always have a warm place in my heart for Milan, as the engineering department there is my baby almost from the start of the plant. My present assignment is in connection with our insurance program, from an engineering point of view. Right now I am in the throes of moving my family back East. That involves several headaches such as disposal of a house, purchase of a new place (at about double its real value), to say nothing of packing, and so on. Attached to the actual moving, I 'inspect' the new place every few weeks but it always seems as if more should be done than I find completed. My office is in Rockefeller Plaza right around the corner from Shell." I misaddressed a letter to At Witham as indicated by his reply, which brings us up to date on this member. "This is the first time in my life that I have responded to any request starting with 'Dear Winfred.' For obvious reasons that name has been kept in the closet with other skeletons. The nickname is At. After 10 years of real living on the West Coast, we moved to Chicago last December to accept a job as executive engineer with the Miehle Printing Press and Manufacturing Company. It was a grand opportunity but it took months of debate and cogitation before we decided to forsake the simple life of the wide open spaces to return to the East. However, having opened wide the hole in my head that I guess has always existed, we made the jump and are now proud possessors of a four-acre rancho, or ranch house, in La Grange. On the coast we were with Western Gear Works as chief engineer, manager of engineering for four plants, and finally assistant general manager. A fine, progressive company with a good future. Hard to forsake, but perhaps we will return some day. We have three children: Gay, 23, Ralph, 16, and Fred, 4. Daughter married to a young engineer in Los Angeles, advises we are to be grandparents in November. No, I don't feel that old and occasionally act younger. We have no M.I.T. men at Miehle Company. How does one go about getting a few? It might make life easier if we had a few."

Marcel Du Bois's headquarters are at the Swiss Federation of Watch Manufacturers, Marketing Department, rue d'Argent 6, Bienn, Switzerland. He comes to New York occasionally, and information concerning his activities can be checked with Ted Joseph at Murray Hill 8-5000.
— JOSEPH S. HARRIS, General Secretary, Shell Oil Company, Inc., 50 West 50th Street, New York 20, N.Y.

• 1931 •

The Class held its 20th reunion on June 9 and 10 at the Mattapoisett Manor, Mattapoisett, Mass. This was somewhat of a departure from our usual custom which has seen the reunions held somewhere in Connecticut. One of the primary reasons was the fact that our usual location, Ye Castle Inn, suffered a disastrous fire early in April. However, after the reunion was over, everyone agreed that it had been no mistake to settle on the Mattapoisett Manor. Norman Fitzgerald drew the honor of coming from the greatest distance — Texas. Believe it or not, Norm has acquired the well-known "drawl."

Included in the list of 29 members present were: Dick Ashenden, Dick Baltzer, Dave Bernstein, Wyman Boynton, Gordon Brown, Vince Damiano, Charles Dolan, Art Donovan, Norm Fitzgerald, Dave Goodman, Jake Gordon, Lou Hesselwerdt, John Hutchins, Dan Johnson, Syd Miller, George Moy, Horst Orbanowski, Walter Paltz, Russ Pierce, Byram Porter, Les Reed, Howard Richardson, Bob Sanders, Sheldon Smith, Bernie Stott, John Swanton, Chuck Turner, Mike White, and Bob Wilson.

The gang started to congregate on Saturday morning and Mr. and Mrs. Smart, proprietors of the aMnor, made everyone welcome. After a delicious lunch, the usual baseball game was started, although a few of the more hardy souls tried the water. That was some baseball game and perhaps the less said about it the better. However, for the record, the score after two sessions, was in the neighborhood of 29-21 with Mike White's team bowing to Dick Baltzer's long hitters.

Saturday afternoon the keg of beer was tapped, courtesy of Russ Pierce who used his influence to obtain it. After a lobster dinner, complete with all the fixings, a business meeting was held to discuss plans for our 25th reunion, and the election of class officers. Your new officers are: President, Howard Richardson; Vice-president, Walter Paltz; Secretary-Treasurer, A. L. Hesselwerdt, Jr. You will hear more about our plans for the next reunion in subsequent issues of The Review. After the meeting, the serious business of the evening took place. Among bull sessions, bridge, poker, and of course some more of the dark brew, a very pleasant evening was enjoyed by all. The famous baseball game was resumed on Sunday morning, by those who could still move a muscle, and there was a rather large gallery. After a fine dinner the exodus began.

In reporting this reunion, your Secretary would again like to express his sincere thanks to John Swanton and Russ Pierce for their assistance and co-operation in making the reunion possible. If the rest of the Class will give the Secretary the help that these two men did on the reunion, you will see plenty of class notes for 1931. Please send in your news. — A. L. HESSELWERDT, JR., General Secretary, Room 3-240, M.I.T., Cambridge 39, Mass.

• 1932 •

Mark your calendar now, June 6, 7, and 8, 1952, as the time set for our 20th reunion. Alumni Day, at Cambridge, will be

June 9. Tom Sears is our reunion chairman and has been hard at work with Joe Welch, Herb Ross, Lou Vassallotti, and Bunny Nealand as the members of his committee. Serious consideration is being given to a location for the reunion which will be equidistant between New York and Boston. Soon after you read this you will probably receive a preliminary mailing giving many details about this reunion, if you are officially listed in the Alumni Office as a member of the Class of '32. If there is any question in your mind as you read these notes as to whether or not the Alumni Office has you on our mailing list, please drop a note to the Alumni Association to the effect that your class affiliation is 1932. A copy of this note to Tom Sears at 31 St. James Avenue, Boston 16, Mass., will assure you of all our mailings on this subject.

Lieutenant Colonel Jim Harper is at duty at the Pentagon. His efforts to round up some news from the fellows from Course XVII has not borne any fruit as yet. Last June John Lawrence was elected vice-president in charge of manufacturing at all the plants of Joy Manufacturing Company. His headquarters will be in the Oliver Building, Pittsburgh, Pa. John was formerly associated with S.K.F. Industries where he was technical vice-president in charge of manufacturing, engineering, and research. Last April Cecil Boling was elected vice-president and general manager of the Bush Manufacturing Company, with which he had been associated for the past 11 years. The clipping giving this news states that he has had extensive experience in sales and engineering in the refrigeration and air-conditioning field. Howard Atwood of Bolton, Mass., is the new president of the M.I.T. club of Central Massachusetts.

At the start of this new volume of The Review, I would like to make my annual plea for news about you, or, if you are modest, about other members of our Class for publication here. Don't forget the 20th reunion, June 6, 7, and 8, 1952.— CLARENCE M. CHASE, JR., Secretary, 1424 East 7th Street, Plainfield, N.J. Assistant Secretaries: CARROLL L. WILSON, Cannondale, Conn.; WILLIAM A. KIRKPATRICK, Allied Paper Mills, Kalamazoo, Mich.

• 1933 •

Received a note the other day from Ed Atkinson, who, after 13 years of country life, has come back to Wellesley Hills, now with Dewey and Almy Chemical Company of Cambridge. Ed reports a visit with the Garcelons and Putnams in Reading. Bill Adams is plant manager of John E. Cain Company in Cambridge, living in Norwood with a girl, five, and a boy two years old. Al Bruce has now made his permanent home in Gloucester and, until recently was with a fish company there. Irv Crane, who is still with Raytheon, is moving to a new home in Waltham. A note from Beau Whitton tells us that George Wrigley, Jr., is a partner of J. E. Sirrine Company, Greenville, S.C. Congratulations, George.— A note from Bill Pleasants explains his new address in Wynnewood, Pa.: They moved to a larger house to take care of the rapidly expand-

ing activities of his two daughters, aged nine and twelve. Bill is assistant manager of operations for Atlantic Refining Domestic Sales. A recent high point was the formal opening of their new \$2,000,000 marine terminal at Revere, Boston; the low point, only a miracle saved their Newark terminal from the Warren Petroleum explosion. Last year they built 272 new service stations. Sounds like a lot of gasoline.

We were sincerely shocked to learn of the death of our good friend Len Gifford last July, just two weeks after he was married to Hilda Jane Thacher. I am sure the heartfelt sympathy of all is extended to his widow and family. — A post card from Doug Stewart tells he just moved his family west to a new home in Whittier, Calif. Doug is having a building built in Montebello, nearby, to house his new company, the Olympic Metal Cutting Company, which will specialize in custom slitting, flattening, straightening, and edging of sheet metal, both ferrous and nonferrous which was expected to get under way about August 1st. Doug visited during the summer with H. Wayne Taul in Fresno, where he is a consulting engineer. A memo from Charlie Woods tells us that he left New York City in June, 1950, to join the National Underwriter Company in Cincinnati, as sales director. This company is the world's largest publisher for the insurance business. Took Charlie 20 years to get out of New York and now that he has had a taste of the Mid-West he likes it very much. Another bachelor "bit the dust": Cal Mohr was married on June 16 to Regina Ann Maple. A note from Cal tells of his employment in Marshall, Ill., by the Velsicol Corporation, makers of insecticides and resins from petroleum fractions. Cal is supervisor of construction and maintenance, located in the town of Marshall, which is near Terre Haute — a small town of 3,000 people. We understand through Cal that Walt Swanton and Bob Smith had their pictures in the *Glass Lining*, a publication of the Pfaudler Company, recently announcing their appointment to the sales force. A note was received from Carl Swanson in Frederick, Md., where he is connected with the H. K. Ferguson Company. Previous to going to Frederick, Carl was working on the construction of the Atomic Pile at Brookhaven, Upton, Long Island. A note from Mrs. C. B. Cooper tells us that Fred Cooper is at Corpus Christi, Texas, where he has designed a cooling tower called the Hydromat. Peyton Cooper '34 is at Dallas, associated with John A. Perkins. Robert H. Macy was recently guest speaker for the convention of the National Society of Naval Architects and Marine Engineers at Mobile, Ala. Bob has spent some time in Argentina as technical advisor on the design and construction of ships and shipyards. He is currently with Palmer and Baker, consulting engineers, in Mobile.

Benjamin F. Sands is candidate for selectman in North Reading, Mass. He is vice-president and director of Lewis and Company, Inc. Fred Aldridge, public health engineer, director of the Division of Sanitation for Seattle, King County, Wash., has been recalled to service for assignment to Iran for a period of two

years. A memo from the Pawtucket-Central tells us that Robert C. Moeller, Jr., was named vice-president of the Collyer Insulated Wire Company. He will also retain his post as secretary and assistant treasurer. Max Neuhaus has been elected vice-president of the Jefferson Chemical Company, New York City, manufacturers of chemicals from petroleum hydrocarbons. Dr. Neuhaus is currently serving on the Admissions Committee of the American Institute of Chemical Engineers and is a member of the Chemist's Club of New York. Frank Gilmore has been elected vice-president in charge of manufacturing of Doelcam Corporation, Newton, Mass., manufacturers of gyroscopic devices. Previous to this election, Frank has been a professor at the Harvard School of Business. William L. Wash is assistant general manager of General Aniline Works Division. Some months ago V. Lawrence Parsegian addressed the Danbury Engineering Society on industrial uses of radioactive isotopes. A new address for John Long, vice-president of Photoswitch, Inc.: 39 Sagamore Road, Wellesley, Mass. A news item covering the sale of Kelley-Koett Manufacturing Company to Tracerlab, William Barbour, President. Congratulations, Bill. Lieutenant Colonel Francis H. Mac Duff is now in Alaska, assigned to Headquarters, Alaskan Air Command. Edward C. Peterson is city manager of Portsmouth, N.H.

Let's keep the notes coming, fellows. — GEORGE HENNING, Secretary, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn 7, N.Y. ROBERT M. KIMBALL, Assistant Secretary, Room 3-207 M.I.T., Cambridge 39, Mass.

• 1934 •

William F. Milliken, Jr., is now manager of the flight research department of the Cornell Aeronautical Laboratory of the Cornell Foundation, Inc., Buffalo, N.Y. It is considered as one of the finest research departments of its type in the world. Bill made a trip to Europe in September to address the Third International Aeronautical Conference in London. That conference is jointly sponsored every two years by the Royal Aeronautical Society and the Institute of the Aeronautical Sciences, U.S.A. His subject of address was Aero Dynamic Stability and Automatic Controls. After graduating from the Institute, Bill worked for two years doing research in its wind tunnel. Following that, he did research in the aerodynamics section of Chance-Vought Aircraft, Hartford, Conn.; with Boeing Aircraft in Seattle, Wash., where he had a hand in developing the B-36; a couple of years in California, helping to get the bugs out of the Flying Wing; and with Curtiss-Wright Aircraft in Buffalo during World War II. For relaxation Bill likes automobile racing. A corner at Watkins Glen, N.Y., is now known as Milliken's Corner, since he succeeded in rolling over there while racing a few years back. He has competed in races from West Palm Beach, Fla., to the tops of Equinox Peak in New Hampshire and Pike's Peak, Colorado. He married Elizabeth Phillips of Seattle, Wash.

Matthew E. Highlands has been advanced to a professorship of food technol-

ogy at the University of Maine. He joined the experiment station there in 1935 and has been called on by the government at various times to assist with technical problems. Karl C. Bruder of Emporia, Kansas, is serving as assistant professor of speech at Kansas State Teachers College. He is also theater director for the college and handles instruction in stage craft and lighting. Henry Andrews, Jr., has been doing research work at Harvard University. He was one of two prominent St. Louis educators who received a Guggenheim grant. The award will permit him to be a research fellow at Harvard on paleobotany. The research will pertain to fossil plants from the coal fields of Illinois. On February 1, he will return with his wife and three children—Holly, 10, Henry, 11, and Nancy, 2 — to his post as dean of the Botany School, Washington University, St. Louis, Mo. The Reverend Joseph A. Hahn of Whitestone has been assigned to the Maryknoll publication and mission education office at Maryknoll, N.Y. Father Hahn has been doing extensive mission work in both China and Bolivia. He was teaching at Lingnam University in Canton until early this year when the Chinese Communists took it over and expelled the foreign personnel. He is the only priest member of the American Institute of Aeronautical Sciences, an organization of leading designers and scientists in the aircraft industry.

Paul A. Archibald, chief metallurgist for the Standard Steel Works Division of the Baldwin Locomotive Works, made an address to the Rocky Mountain Chapter of the American Society for Metals in Denver, Colo. From 1935 to 1937, he was employed in the open hearth and metallurgical department at the Illinois Steel Company, which is now the South Works of the Carnegie-Illinois Steel Corporation. From 1937 to 1941 he was metallurgist for the Denver and Rio Grande Western Railroad, and in 1941 he became associated with the Standard Steel Works Company, now a division of Baldwin Locomotive Works. During World War II, he served with the Corps of Engineers, U. S. Army, and became chief metallurgist at Standard Steel in 1949. Thomas L. Apjohn of Merchantville, N.J., was invited by Defense Secretary George C. Marshall to attend a joint civilian orientation conference. He has been on leave from his position at Socony-Vacuum Laboratories, Paulsboro, N.J., since October, 1950, at which time he undertook his present duties with the Petroleum Administration for Defense. During World War II, he was in Washington with the Petroleum Administration for War. Tom married Helen E. Bube of Brockton, Mass., and has two children, Thomas L., and Hilary Louise. Harold C. Harsh is manager of Ansco's quality control department. Shortly after leaving M.I.T., he became production supervisor in Ansco's paper plant. He was later placed in charge of development work and directed much of the research and development of Ansco color products. From 1946 to 1949, he was manager of the chemical development department. After World War II, he was sent to Germany at the request of the Department of Commerce to investigate color photog-

raphy there. He is a Fellow of the Society of Motion Picture and Television Engineers and a member of several scientific groups, including the Armed Forces Chemical Association, the Armed Forces Communications Association, and American Society for Quality Control. He lives in Binghamton with his wife, Evelyn, and their children — Penny, 10, and Bob, six.

Frank R. Milliken, who is assistant manager of the Titanium Division of National Lead Company, has been honored by the American Institute of Mining and Metallurgical Engineers for "advancing the technique of the Metallurgy and Beneficiation of titanium-bearing ores." For 10 years Frank has sparked National Lead's drive for ore to meet industry's needs for titanium products. Jet engines, paint, paper, and shoe paste depend on a steady flow of titanium ores. In 1941 National Lead, looking for the man to head up production at its MacIntyre Development at Tahawus, N.Y., 50 miles south of Lake Placid, called Frank from Utah where he was chief metallurgist for a group of consulting engineers. The Tahawus mine and mill were carved from wilderness. Putting wide experience in mineral dressing and development of ore-flow sheets to work, Frank had a large part in design and development of the Tahawus plant. He had the mill in full operation 19 months after designs were started. He solved the problem of ilmenite recovery by flotation from the slime ores. The plant is now producing well in excess of its 4,000-ton-per-day rated capacity. Frank lives at Darien, Conn., and has two sons. He is an enthusiastic fisherman, golfer, and hunter. — George Koller, who is president of the Newton Parent-Teacher Council, recently addressed the Quincy council on the subject of using the parent-teacher council as a clearing house for the exchange of ideas and opinions to obtain unified school representation in a community. George is working as an engineer for one of the large oil companies and is the father of two sons. Charles E. Ballesien is directing the mechanical laboratory of the Southwest Research Institute at San Antonio, Texas. He is a research specialist in automatic machinery and kinematic synthesis. His laboratory is set up to make basic determinations of strength, dimension, and motion and to study industrial machinery and manufacturing processes. To perform this work, the laboratory equipment includes high-speed motion-picture cameras, capable of exposing 8,000 frames per second; various types of static and dynamic testing machines; and precision measuring instruments accurate to millionths of an inch. Some of the projects on which the group have worked include development of industrial control equipment, gas turbines, ramjets, food and manufacturing equipment design, ordnance design, and testing and time and motion studies.

Albert E. Heins was recently promoted to a full professorship by the Carnegie Institute of Technology. After receiving his Ph.D. at M.I.T. in 1936, he taught at Purdue University before going to Carnegie in 1946. He has written a number of scientific articles for United States, Canadian, and English journals. — Fred

Vaughan sent us an announcement of the arrival of Daniel Hitchcock Vaughan, born June 26th, weight eight pounds, four ounces. — Our class agent, Lieutenant Colonel Robert K. Roulston was married on June 9 to Barbara Attwater Smith, daughter of Mr. and Mrs. Harold Attwater Smith of Winchester, Mass. Among the ushers were John H. Colby of the Class of 1935 and John G. Callan of the Class of 1934. Bob and his bride took their honeymoon at a place called Mizzentop on the outskirts of Hamilton, Bermuda. It was recommended to them by Art Esslinger and apparently lived up to all expectations. Bob was recently called back into the Air Force from his position as assistant to the president of the Air King Television Company in Brooklyn, N.Y. He and his wife are now located at 635 Brummel Street, Evanston, Ill., where Bob is chief of the production section of the district headquarters in Chicago. W. Norris Parks was married on December 6 in Newport News, Va., to Mary Adeline Scott, daughter of Mrs. Stanley Scott of Eastville, Va. the couple will make their home in Newport News. Raymond W. Ferris was recently appointed manager of contracts for the shipbuilding division of the Bethlehem Steel Company by Dan Strohmeier, vice-president of the shipbuilding. He has been assistant manager of contracts for the past seven years and will take over the duties of the late W. W. Watson. Ray married Phyllis L. Vernon of Seattle and has two children. He lives in Hingham, Mass. — JOHN G. CALLAN, JR., General Secretary, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, Assistant Secretary, Chile Exploration Company, Chuquicamata, Chile, S.A.

• 1935 •

Contrary to the evidence, or lack of it, the Class of 1935 has a secretary, and a fair supply of news about classmates has accumulated in his desk. Here it is. Francis B. Sellew has opened an architectural office in Boston in partnership with a Mr. St. John Smith. Frank received a traveling scholarship after graduation and earned his master's degree from M.I.T. in 1940. During this period he was associated with the Steuben Glass Company and Leo Jiranek, designing ornamental glassware, furniture, and lighting fixtures. From 1938 to 1942 he was a architectural designer for the Newport News Shipbuilding Company, designing and supervising construction of shipyard structures, employees' housing and passenger accommodations for ships. Subsequently he took part in the design of structures on the Panama Canal, and more recently has been a naval architect for the War Department in Washington. Phil Rhodes writes that he gave up his own business in Portland, Maine, about a year ago to become technical director for the Clopay Corporation, Cincinnati. Clopay manufactures a variety of plastic merchandise, including draperies, window shades, and garment bags. In good Course X fashion Phil describes these and other products ending in "yl," "ol," "ide," and so on, that baffle a Course XV secretary. Phil has a son entering the University of Cincinnati this year, and invites members of the Class to

call on him when they are in Cincinnati. Charles H. Schauer is director of grants for the Research Corporation, New York. The program Chuck administers supports research projects in colleges and universities throughout the country. For several years after graduation Chuck was an engineer for the Philadelphia Electric Company. During World War II he was with the Office of Scientific Research and Development and was awarded a Presidential Certificate of Merit. Allan Mowatt, formerly educational director for Eastern Cooperatives, is now an electrical engineer for Raytheon. A year ago Philip H. Johnson, Jr., was appointed principal of an elementary school in Sudbury, Mass. Your Secretary has lost track of Phil Johnston spelt with a "t." At last reports he was heading from New York to Iowa, or some neighboring corn-belt state. A letter from Charles K. Allen, one of four Army graduate students finishing in '35, gives news of himself and his buddies. Allen, a colonel of ordnance, is commanding officer at the Ravenna Arsenal, Apco, Ohio. Frank Besson is a brigadier general in the Transportation Corps, Washington. George Kumpe and Bill Fraser are colonels in the Engineers and Armored Corps, respectively. Allen does not know their whereabouts. Frederick P. Meyer, who was with us freshman year, writes to say he is a machine-tool designer for the Gleason Works, Rochester, N.Y. Fred goes on to explain that his family of a wife, six boys, and two girls keeps him "mighty busy." Editorially, secretarily, or what-have-you, I can imagine they do. Charles W. Smith has been appointed assistant supervising engineer in the process design division of the Esso Engineering Department of the Standard Oil Development Company, an affiliate of the Standard Oil Company of New Jersey. With all respect for "Smitty," I can't resist saying that Standard Oil even worked in the words "research and engineering" in their announcement. They go on to say that Smitty received his B.S. in Chemical Engineering in '35 and his M.S. in '36 at the Institute; joined Standard Oil in 1939; and has been principally active in the manufacture of synthetic rubber. Smitty lives at 36 Norwood Avenue, Plainfield, N.J.

Benjamin Gruzen is associated with his brother Sumner '26 in the firm of Kelly and Gruzen, architects and engineers, with offices in New York and Boston. The American Institute of Architects recently presented the firm with an Award of Merit for the design of the U. S. Veterans Administration Hospital at Wilkes-Barre, Pa. Sumner Gruzen was in charge of design while Ben served as architectural co-ordinator between the architects, engineers, and contractors for the project. Louis Fong was recalled to active duty as a major in the Army last winter to serve with the Headquarters Airways and Air Communications Service. Louis joined the Signal Corps very soon after graduation and spent almost four years overseas in Panama and later in the China-Burma-India theater. George M. Reece has been putting his biology and public health training to work for the State of Massachusetts, Uncle Sam, the City of Philadel-

phia, and, more recently, for the firm of Fay, Spofford and Thorndike in Boston. A newsclip of several months ago describes an exhaustive study George made of the critical water supply situation in Norwood. Don Wood writes from London to correct an error in describing his business affiliation in England. Don works for the Reynolds Jamaica Mines, Ltd., an American subsidiary of the Reynolds Metals Company. He is in England until some time in 1952, representing Reynolds during the construction of ore-carrying ships. This past winter Prescott Smith addressed a chapter meeting of the American Society of Tool Engineers in Hartford on the topic, "The Tool Engineer and Education." Prescott is chairman of the Boston chapter of the A.S.T.E. — A letter from the Nagoya Engineering Works, Nagoya, Japan, reports the death in 1947 of Takaaki Yamamoto.

Classmates attending Alumni Day exercises in June included Bill Abramowitz, Randy Antonsen, Bill Brockett, Dick Brown, Art Cohen, B. Dudley, Carl Floe, Pete Grant, Dick Lawrence, Frank Muldowey, Phil Rhodes, Dick Rice, Tom Rinaldo, Frank Sellew, and Walt Stockmayer. The ranks of the bachelors have lost another member. Rufe Applegarth and Margaret Corson were married in Wynnewood, Pa., in July. Rufe is vice-president and chief engineer of the National Aeronautical Corporation, airplane instrument manufacturers, in Ambler, Pa. Since the last edition of 1935 notes I have been made assistant chief supervisor of planning for the Bridgeport Works, Remington Arms Company. Last winter much of my time was taken up on the Fairfield Citizens' School Study Council. This summer the chairmanship of the Race Committee at the Black Rock Yacht Club and working Saturdays hasn't left many hours for pure recreation.—J. BARTON CHAPMAN, *Secretary*, 7 Lalley Boulevard, Fairfield, Conn.

• 1936 •

May I address these notes as a class message, reporting on the 15th reunion and bringing the Class up to date on summer activities. These are the first notes for several months, since The Review, as you know, is not published during the summer. The biggest news, of course, for those who did not attend, is the 15th reunion. We really had a great time on June 8, 9, 10, and 11; at the Weekapaug Inn, Weekapaug, R.I. Fletch Thornton and his committee did a marvelous job and, believe me, they not only deserved but received an enthusiastic vote of thanks from the class members and their wives who attended the reunion at Rhode Island. First of all, you should know who of our classmates attended. Here is the official list, which includes wives, in most instances: John C. Austin; Doug Cairns; E. H. Cargen; William A. Cresswell; Richard A. Denton; Dana Devereux; Richard S. DeWolfe; Harry Essley; H. R. Foster; Webster H. Francis; W. W. Garth; Robert S. Gillette; Al Gray; Eli Grossman; Richard Halloran; Jack I. Hamilton; A. E. Hittl; M. M. Holcombe; Stan Johnson; Lawrence Kanters; Alice H. Kimball; Elwood H. Koontz; Roger A. Krey;

Michael J. Lach; James H. Leary; Roger E. LeBlanc; Henry F. Lippitt; Brenton W. Lowe; Hamilton Migel; Phillip Norton; R. J. Ozol; L. G. Peterson; Fred A. Prahl; E. B. Rowe; Dorian Shainin; Gordon C. Thomas; F. P. Thornton; A. Michel Tremaglio; George S. Trimble; Roman I. Ulans; Pyam W. Williams; Robert E. Worden.

The Reunion Committee, in addition to Fletch Thornton, included: Elwood H. Koontz; E. H. Cargen; M. M. Holcombe; Henry F. Lippitt; Gordon C. Thomas; Ariel A. Thomas. The Ladies Committee, incidentally, included: Alice H. Kimball; Barbara Koontz; Louise Thomas; Vivian Holcombe; Sally Garth; Peggy Thornton; Beatty Austin. The meeting began on June 8, and a good many sturdy classmates arrived early and for dinner. The following morning at 10 o'clock was official registration time, with the help of: Stanley T. Johnson; Roger E. LeBlanc; Richard Halloran; Roger A. Krey; Philip Norton; and Jack I. Hamilton. Buffet lunch on Saturday, the 9th, was terrific, thanks to Eli Grossman and John R. Graham. Saturday afternoon and evening included swimming and various other kinds of sports, especially cocktails, a banquet, and dancing until the wee hours of the morning. Sunday, there was an after-breakfast class meeting, at which time the previous class officers were re-elected. Also, we came to the conclusion that our treasury was still solvent. As of the moment, I can definitely say that we are, with \$178.18 in the bank. Sunday evening included more cocktails, and as many miscellaneous activities as there were tired, but nonetheless imaginative, classmates who had not gone to bed. Monday morning, those who had not returned to Cambridge, convened for breakfast, and then on to conventional Alumni Day activities. The whole thing was a great success, thanks to the co-operation of everyone.

Thanks to all who are writing the Secretary. If we have not already acknowledged your letters in The Review, or in person, we will do it by mail. It is a little difficult with such a heavy schedule to keep up, but we will do our best. In the meanwhile, thanks again, and keep up the good work. — The following will bring you up to date on happenings during the summer months. We understand that Wally Mathesius, Jr., was married the latter part of May. Congratulations, Wally. We have another marriage to report: Henry F. Herpers, Jr., married Eva Elizabeth Keller of Trenton, N.J., this past summer. Congratulations to you too, Henry. John G. Stapler was recently made manager of National Gypsum Company's plant at Niles, Ohio. John was formerly chief of industrial engineering for the Stewart Warner Company's South Wind Division. Tony Hittl has been kind enough to supply us with the following information: Charles H. Betts is now construction engineer with the General Electric Realty Corporation. His family has leveled off at four daughters. Bernard B. Gordon is foundation engineer of the East Bay Municipal Utility District of Oakland, Calif. After three years of handling all foundation and soils work on the Sewage

Collection and Treatment System, he was put in charge of the foundation design unit which is responsible for all foundation engineering and applied soil mechanics for engineering of both sewage and water supply divisions. Robert E. Sawyer, mechanical engineer of the Steam Power Plant design and construction, spent half of 1950 as resident engineer on a piping job. He is currently working on a modern steam boiler for a paper mill. Incidentally, Tony Hittl, as most of you know, is assistant to the superintendent of the Tonawanda Laboratory of Linde Air Products Company, supervising design and development of oxygen production equipment. His children are now five and two and one-half years old.

O. L. Angevine, Jr., formerly chief engineer of the sound equipment division, Stromberg-Carlson Company, is now chief engineer of the Caledonia Electronics and Transformer Corporation. John Ayer, Jr., of Denver, has been made chief engineer of the Denver, Rio Grande and Western Railroad. — ROBERT E. WORDEN, *Secretary-Treasurer*, Fidelity-Philadelphia Trust Building, Philadelphia 9, Pa.

• 1938 •

To start the year's news, we have an excellent report from Fred Kolb, covering the activities of those classmates who were at the Victory Dinner for the fund-raising drive in New York last May.

Fourteen members of the Class had the combination of good fortune and good traveling excuses to gather at the Sloan Victory Dinner on May 3 in New York. A predinner anxious search of the cocktail sippers turned up a few familiar faces, and the gathering found itself completed at the two tables grouped around that paragon of Alumni Association activity, Don Severance (who finally got us seated out from under the balconies). Conversations were varied and short-range amidst the hubbub of a banquet, and among some of the fellows who get together frequently and among others who hadn't seen each other in years. Jim Acker was down from Schenectady, where he's with General Electric in the gas turbine engine division. He failed by 400 miles, however, to take the crown of delegate-from-farthest-away, won by Paul Des Jardins up from Charlestown, W.Va. Paul has been with Worthington Pump Machinery Corporation, but was on a last fling before slipping back into the blue and gold of a lieutenant commander, assigned to U.S. Navy shipbuilding scheduling activity. Howie Banzett from Edgewater, N.J., headed the delegation from the Near South. Howie is now production manager of the screw machine department of Alcoa in Edgewater. Giff Griffin had a lot of every-day gossip to discuss with Howie, since Giff nearby is test engineer for the New Jersey Public Service Electric and Gas Company. Ed Hadley traveled in from the ivory towers of Murray Hill where he specializes in the mechanical design and development of "outside plant" equipment for Bell Telephone. Ed has hardly changed in 13 years. You've heard of potted circuits? Well, Ed pots them. And, finally, in the dignity of a full-blown mustache, John Mahoney also represented

New Jersey. Far from a brewmaster or bass on the barbershop quartet, the mustache disguises the head of technical service research for Merck, where John worries about customer problems and product studies, primarily with chemicals used for food and feed.

New Yorkers, of course, had the best representation: Matt Boissevain, with all the dignity appropriate to an assistant professor of mechanical engineering at Pratt Institute, Brooklyn; and Lou Bruneau, spark plug of the M.I.T. Club of New York and active current planner for our 15th reunion. Remember it's only two years away! Lou, of course, has a spare-time activity with Bruneau and Von Minden, certified public accountants. Where he finds the time to spare from his M.I.T. activities is a mystery well suited to the aura that surrounds an income tax expert. Jim Emery is in public service in somewhat different capacity; Jim is engineering assistant for the American Transit Association, a trade association serving the operators of city streetcars and busses. Jim's responsibility is to keep the operating companies up to date on vehicle design and maintenance, and on electrical power supplies. George Skaperdas, with M. W. Kellogg, took an evening away from process development, where his responsibilities take him into all the fields of industry served by Kellogg. Arthur Sperry slipped in from Long Island where he is engineering department head for Sperry Gyroscope, producing Naval fire-control equipment. And, finally, from the Big-City-Boys, that brown-water sailor, Dave Wright. As president of Lake Tankers Corporation, Dave has in design and near operation a new "Deluxe Tow" to operate on the Mississippi, offering de luxe passenger accommodations! Dave has authorized me to say that if you'd like to while away your vacation in a deck chair on the mint julep route, and want special consideration on rates, he can't do anything about it. On work days, of course, Dave oversees the operation of plain ordinary tankers, tugs, and barges on the inland waterways.

Having reported on the first dozen, there are only two others who rounded out the representation. Don Severance and me. Conspicuous by their absence, however, were the four who made reservations but failed to show: Harry Hollander, Harold James, Dale Morgan, and Homer Oldfield. Just plain luck (honest) brought me in from Eastman Kodak in Rochester, where I've been for several years in the department of manufacturing experiments. Despite the name, we manufacture nothing, but instead assist the manufacturing departments of the Sensitized Film Division at Kodak Park. Oh yes, I've also been busy finding out why building contractors charge so much to put the finishing touches on houses — when you do it yourself it takes so d— long! As for Don, there's a man who's going places. Following so closely in the footsteps of a leader of Alumni from a hell-raising class, Don has been doing his best to plant a hot-foot on '38. Had his head in the corner with Lou Bruneau most of the evening figuring how to get more of us up off our big fat briefcases. If you can sur-

vive the next two years without an irresistible urge to be back at that 15th, it'll be not only because you're petrified, but also because Don hasn't tossed any firecrackers your way.

Success of the evening was overwhelming and I had a mighty good time among fellows I've missed for years.— ALBERT O. WILSON, JR., Secretary, 24 Bennington Road, Lexington 73, Mass. Assistant Secretaries: RICHARD MUTHER, 116 West 67th Terrace, Kansas City, Mo.; FREDERICK J. KOLB, 211 Oakridge Drive, Rochester 12, N.Y.

• 1939 •

Alumni Day, June 11, was attended by the following representatives from our Class: Walter N. Brown, Jr., Paul W. Comstock, J. Warren Evans, William V. Goodhue, Frederick B. Grant, Peter Hunnsaker, William F. Pulver, Albert C. Rugo, Donald W. Scully, Seymour J. Sheinkopf, Oswald Stewart, 2d, and Alexander M. Thackara.

From Myron Norman we hear that he became a proud father on July 16, making his family now total five, one girl and two boys. Three years ago, Myron left his job on the Coast selling metal finishing equipment and chemicals to return east to go into the liquor business. He now is operating a wholesale and retail business in Brookline.

Johnny Dodge, a lieutenant colonel, has been transferred to the United States Air Forces' Arnold Engineering Development Center. During World War II, he served with the Air Service Command and with the Air Advisory Group in the China-Burma-India Theater of Operations and was decorated with the Chinese Cloud and Banner. At the Arnold Center, he is chief of Facilities Project Office, Research and Development. Incidentally the Arnold Center's installations will be bigger and more powerful than those at Wright Field, Dayton, Ohio. John is married to the former Corrine Ruth Sobotka of Cleveland, Ohio. Also moving east is Ted Snow who, since 1939, has made his home in Seattle, Wash., where he was with Boeing. Ted has been transferred to the Boeing plant in Dayton, Ohio, and is living near there with his family, including eight-year-old Betsy and four-year-old Ted, Jr.

In Lexington, Mass., Herb Stewart received the honorable appointment as Community Fund chairman for the drive that opened in October, carrying a good deal more work than honor in his new job. Along with his two- and five-year-old sons, Herb manages to keep busy. He is president and treasurer of Toroids, Inc., of Newton and general manager of American Associates, Inc., also of Newton. Again we would like to congratulate Frank Sargent on the splendid job he is doing in revising the Northeastern fishing industry. Each month we receive clippings from New England newspapers praising Frank's excellent work in organization and solution of fishing problems. J. Warren Evans returned to his home town of Everett last June to address the Kiwanis Club luncheon. Warren is now chief of construction for the Atomic Energy Commission and he spoke on re-

cent developments in nuclear reactors. We are pleased to mention that Arnold Goldberg, now living in Chicago, was married to Beatrice Muriel Levin during the summer.

From Ozzie Stewart we have considerable news including the fact that he is with the Dewey and Almy Chemical Company doing plant engineering work at the Cambridge plant. The Stewarts now have two "wonderful little girls," Ann Haslam and Mary Wellington, and the family is living in Marblehead. Ozzie goes on to say: "I hear quite regularly from Albert H. Chestnut (Mining), this is Al, not Hal. He is located at Buffalo Forge in Buffalo, N. Y. His specialty I believe is industrial engineering. He is well back on his feet and enjoying life again after having taken terrific punishment on the Bataan Death March with subsequent Japanese imprisonment. Oddly enough, the last post card that I had from him during wartime prior to the American surrender was postmarked Clark Field. Al at that time was a Coast Artillery Corps lieutenant attached to the Air Corps. I received his card on Pearl Harbor Day, December 7, while stationed at Fort Monroe, Virginia. Sunday morning mail delivery at that Army post brought me his card virtually at the same time of the initial bombing."

"Dix Loesch (Richards Llewellyn Loesch, IXB) paid us a surprise visit this spring here in Marblehead by coming out to supper one evening while attending a special jet engine school at the Lynn River Works plant of General Electric. Dix has been with Boeing since leaving service as a Navy pilot. He is now one of three senior test pilots at the Boeing Wichita, Kansas, factory, doing experimental testing on the new large jet bomber, the XB45. He is married, with two children. Sungu Riza Soyak, my thesis partner in Course II, is back home in Ankara, Turkey. He represents several American firms there, among them the International Harvester Company."

Also, from George Beesley a nice letter giving a few but not sufficient details on his trip to Central and South America from which he returned in early June. George is with the Whittemore-Wright Company, manufacturers and dealers in oils, beeswax, floor wax, and so on. And finally we are pleased to see a letter from Leo Kiley, just a little too late to make the previous class notes. Leo mentions that the Air Force has sent him to the Ohio State University for two and one-half years in which time he hopes to receive a Ph.D., specializing in nuclear chemistry. Leo has seen Lew Orrell who is also at Ohio State University, likewise studying for a Ph.D., but in metallurgy. Congratulations to Lew and Leo who were both initiated into Sigma Xi last May. As you may know, Leo is a lieutenant colonel in the Air Force, is married, with a six-year-old son and a five-year-old daughter. He recently saw Seymour Sheinkopf who is now owner and operator of a good-sized hardware store in Mattapan. Through Leo, we learn also that Steve Sullivan has entered the "class stork derby" with two sons and a daughter. Steve is working for Bethlehem Steel

in Baltimore and living in Dundalk, Md. The column becomes progressively easier to write as the correspondence comes in. We appreciate very much all the information for this issue and would like to be able to have similar columns in future issues.—**STUART PAIGE**, *General Secretary*, 701 Mill Plain Road, Fairfield, Conn. *Assistant Secretaries*: **GEORGE BEESLEY**, Whittemore-Wright Company, Inc., 62 Alford Street, Charlestown 29, Mass.; **MICHAEL V. HERASIMCHUCK**, Post Office Box 495, Bethlehem, Pa.

• 1940 •

The first letter I received during the vacation season was from Rowland Peak who wrote: "I do not remember exactly what the class dues were to be, but anyway I am enclosing \$5 to cover mine for such length of time as it will. Please advise when this has run out and I will forward more. [At the rate voted at the last reunion \$5 covers 10 years' class dues.] I am still here in New Orleans with the Illinois Central Railroad and we are engaged in constructing a new Union Passenger Terminal for the city. My family consists of my wife, Adeline, who was with me last year at the Institute, and three children, two girls and a boy, aged three, six and nine. There doesn't seem to be a very great concentration of Technology men in this area. The only ones that I am in contact with, at present, are Walter Morton '41, who is with an advertising agency in Chicago, and Charles Peck '41, who is teaching at Carnegie Institute in Pittsburgh. I am still hoping to make one of the class reunions in the near future, but I don't know just when it will be." Pittsburgh and Chicago seem to be a long way from the "area" of New Orleans; but then the I. C. really gets around, as I well know — my wife comes from Fulton, Ky., one of the main junction points on it.

Another letter with five years' dues came from John Joseph: "It is nice to read the class notes these last few months. They seem longer and newsier than ever. In appreciation, here are my class dues. In August, 1945, I was married to Louise Walker of Fresno, Calif. I was readily snared, having spent the last three years in the wilds, and I mean the wilds, of India and China. As a radar and air-warning officer, one of our locations included a station in the Naga hills. The Nagas get a thrill out of head hunting. The younger the recent owner of the head the braver the hunter since it proves how close he went to the enemy tribal village. We have three offspring, Ben, nine, Jean, four, and Claire, two. Lest any one wonder, I was fortunate enough to pick my son along with my wife. I have two jobs — entirely unrelated. It would require too much wordage to explain why. I am vice-president and general manager of Brrr, Inc. We manufacture an all-plastic, double walled, insulated, injection molded, polystyrene ice bucket. I am also a sales manager for *The Book of Knowledge*, an old love of mine since I was about six years old. I have seen Seth Levine several times in recent years. He is in Washington. Formerly, he was a lobbyist for the C.I.O. Maritime Union.

Now I believe he is a labor relations consultant on his own. Stuart White is with the Bell Labs at Whippany doing some ultrasecret work. He is married and has a son, Skippy. Bob Imsande '42 is an engineer with Flintkote. He married a Rutherford girl named Betty, and they have two daughters, Barbara and Beverly. We see each other fairly frequently as they live in Rutherford, a stone's throw from here. (Hasbrouck Heights, N. J.)"

Another letter has come from Joe Wiley: "Your efforts in The Review prompt me to tell you about my latest news. Pete Sosa '41 has been transferred to Lyons Veterans' Hospital, which is only a very short way from my home (Bedminster, N. J.). As a result, I have had a chance to see him rather frequently lately. He recently began undergoing treatment and when I saw him today (August 5) I found him remarkably improved. He was just as he had been when we knew him at Technology. His address is Lyons Veterans' Hospital, Ward 2A, Lyons, N. J. I am leaving American Machine and Foundry on August 20 to go into business with Mrs. Wiley's father at Hummel Chemical Company, 90 West Street, New York. I will be vice-president in charge of the steel division, which does an import-export business in steel and steel products. We plan to expand our activities to take on domestic and export distributorships for mechanical items, primarily industrial equipment and supplies. Tell all of your readers to exert themselves a little bit and write to you. I'd like to hear about what everyone is doing."

Also during the summer I received a card from Milt Green who completed his work for a doctorate at Columbia University and now is with Polaroid Corporation in Cambridge. Lots of luck to Joe and Milt in their new jobs. Also, a short note from Dick MacPhaul inquiring about class dues. The "awful truth" as Dick puts it is 50 cents a year or \$2.50 for five years.

Although this was an off year for '40, still 10 classmates were able to be present at Technology for Alumni Day. Those present were: Robert A. Bittenbender, John L. Danforth, Bradley Dewey, Jr., John R. Gray, Leslie G. Higgins, E. Taylor Lyon, John J. Piotti, Jr., E. George Pollak, Richard G. Robertson and M. Arnold Wight.

Kenneth Fox, who is a former president of the Lowell Textile Institute and is now vice-president in charge of technical services for the Burlington Mills in Greensboro, N.C., received an honorary master of science degree from Lowell last June. Kenneth also rendered the presidential inauguration address for the new president. Lawrence Kelbley received a master of science degree from Ohio State University last June. Andy Stokes is director of Research and Development for Godfrey L. Cabot, Inc., of Boston. He and his wife, Connie, have three sons, Jeff, Harry and Christopher. Bill Ready has been promoted to the position of general sales manager by the National Company, Inc., of Malden and Melrose.

Congratulations are also in order for several other '40 men. Ed Colson was wed on May 19 to Dorothy Prescott Foss

in Campton, N.H. Ed is an engineer with Edgerton, Germeshausen and Grier, Inc., in Boston. John McGuigan and Patricia Thomas Fehr were married on April 8. John is with the Bell Telephone Labs. Don Monell and Lila L. Swift were wed on April 20. The final note of this column is a reminder to keep writing and help make this full of news every month.—**ALVIN GUTTAG**, *General Secretary*, 7114 Marion Lane, Bethesda 14, Md. **MARSHALL D. MCCUEN**, *Assistant Secretary*, Oldsmobile Division, General Motors Corporation, Lansing 21, Mich.

• 1941 •

The 10th reunion of the Class of 1941 was held at the Curtis Hotel, Lenox, Mass., on the week end of June 9 and 10. Your reunion committee plans a formal news release on the activities to appear in this column in next month's issue of The Review. Accordingly, we can only report a few informal facts at present and suggest that you anticipate next month's Review for some very interesting items about the reunion. Unofficial count: 52 couples, 12 single men (either unmarried or with wives having, or having had, babies), and one baby attended reunion. The baby, belonging to Mr. and Mrs. George Palmer, did not participate in the activities, but all others did, thus justifying the complete program planned by the committee. Things started informally Friday afternoon and, we understand, continued through Sunday night. Our meteorologist (Rog Finch, ex officio) and hotel manager (George Turain, officio) were very kind, for we enjoyed excellent weather and accommodations. The vote was overwhelmingly in favor of returning to the Lenox for the next reunion. Will Mott was re-elected class president for the next five-year period, and a class constitution was adopted. Lou Jiminez-Michelen broke all records in distance traveled — starting from Venezuela — while John Stern, Norton Polivnick, and Frank Storm took second prizes having started from California, Colorado, and Texas, respectively. Norm Karasick and Irv Stein took the booby prizes for they walked over from the next village. Irv redeemed himself by acting as unofficial photographer. Warren Knight found the trip from Los Angeles too long but furnished, via air freight, sufficient prizes for all the gals — a very generous gesture, appreciated by all. More details to follow next month.—**STANLEY BACKER**, *General Secretary*, 335a Harvard Street, Cambridge, Mass. **JOHAN ANDERSON**, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

• 1943 •

Writing the first class notes in the fall is an easy job. Such is the case because considerable news accumulates during the summer.

Thus, on June 29, Mary Lu was born to proud parents, the Loring Frederick Hosleys. These fine people, who formerly lived in Morristown, moved during the spring to 28 Cypress Drive, Trenton, N.J. But I am skipping ahead of my story be-

cause I should start with April 14 in Colorado Springs, at which time and place the former Catharine Maytag and Gwynn Herndon Robinson were married in St. Stephen's Episcopal Church. The new Mrs. Robinson is a Vassar alumna, and her husband, on leave from the Matheson Chemical Corporation in New York, returned to active duty with the Air Force early in May. On the last day of May in Cambridge, Richard Brooks Alder and the former Dorothy Alice Gordon were married. The couple spent their wedding trip in Bermuda, and returned to live in Concord, Mass. Dick, who has received his D.Sc., is now an assistant professor of Electrical Engineering at M.I.T. His wife is a graduate of Endicott Junior College. And of blushing June brides, we have three to report. The first was the former Jean Young Harris who was married to David J. Crawford in the First Presbyterian Church in North Arlington, Mass., on June 9. Dave is an engineer with the International Business Machines Corporation in Poughkeepsie, N.Y. On June 23, our second June bride was Dorothy Pastoriza, who, on that date, was married to Howard Moore Bollinger in the Reformed Church in Bronxville, N.Y. Howard's wife is an alumna of Hood College. After completing Harvard Business School, Howard went with the Kellex Company as an electrical engineer in Silver Spring, Md. It was on June 30 in Newark N.J., that the former Lois Jane Meunster and Stanley B. Conklin were wed. Stan is studying for his Ph.D. at the University of Pennsylvania. He is also a member of the Freehold High School faculty. A wedding which took place in Tulsa in September was that of Mary Barbara Matson and Lieutenant Herbert C. Twaddle. The future bride is an alumna of Randolph Macon and graduated from the University of Arizona. Herb has been recalled to active duty with the Navy, and is stationed with the Bureau of Ordnance in Washington. October 6 was the date chosen for the marriage of Sarah Spofford Beadle and Frederick A. Wolff. This couple will be married in Wilmington, Del., the bride's home. Vassar is Sarah's alma mater.

George Musgrave has sent me some welcome news about his doings. Here, in his own words, is what he says for himself: "For the last three years I've been working for the Martin-Parry Corporation in Toledo, which makes and distributes the Rexair vacuum cleaner, as well as Metlwal movable steel partitioning for offices and ships. I'm in the business end of the work, principally in the administration of the branch sales organization. About the only time I come into contact with the factory is when a new labor contract is to be negotiated, or, more recently, when the C.M.P. regulations were announced and somebody had to wade through them and come up with applications for the controlled materials. Most of the time I am working with such things as branch personnel, rents and leases, capital equipment, and legal cases. I married a Toledo girl, Mary Jane Caldwell, two years ago, and we have a year-old daughter, Nancy Jean. We've built a home here in Toledo, and, at the moment, our main home activity is

trying to make the garden come to life." He adds a descriptive postscript too: "My wife tells me I am getting fat and bald."

Now to add confusion to the notes, we have news of Albert Joseph Kelly '48 and Albert John Kelly, Jr. Of the former, a Navy lieutenant, I have word that he has been flying an AD *Skyraider* attack bomber in Korea. He was recently an honored guest at the Community Day parade held in Roslindale, Mass. — Jack Kelly has written an interesting letter, much of which I quote about himself, and, as he puts it, on "other '43'ers on whom I keep tabs." Of himself, he says he is a resident of Westfield, N.J., which is about 10 miles from the Esso Standard Oil Company's Bayway Refinery where he works. He continues: "My wife, Lois, and I have recently bought a three-bedroom house here in Westfield where we and our two spalpeens, Brian and Kevin (with Kelly for a last name, we figured that we'd fix them up with Gaelic first names, too), are living in the cool, clean country air as compared to our former abode in Elizabeth. I am a group head on light ends recovery and utilization and aviation gasoline manufacturing problems in the technical service division of Esso. On occasion I've taken a trip to our Baton Rouge plant where Harry Ottinger is located; I believe he is in the chemical technical service division there. In my department is Andy Kean, who is married and has a little guy, now about a year old. He's having a house built in what we call the mountains in these parts — highest peak about 5,600 feet above sea level. Another in T.S.D. is John E. Gardner, who is now an assistant section head in the department, assisting to head up work on economic and statistical studies for our East Coast refineries. Besides doing all right for himself in Esso, he's been doing a fine job on the home front, too. He has three children: Susan, six plus; Ann, five; and Johnny, three. He is living in Scotch Plains in a year-old house. Barrett Russell dropped in to see me in the office. Russ tells me he is really enjoying his new (year-old) job with Du Pont's tetraethyl lead division. Russ is working out of their Chicago Office while contacting a number of refineries in that area, particularly in the northern Indiana section. He mentioned seeing Curt Smith quite often at Whiting, where the latter is with Standard of Indiana. Bill Franklin also came with Esso's technical service division on graduation in 1943, but in 1948 Bill left Esso to go to work for a steel concern located in Brooklyn. This outfit has a plant over here in New Jersey, too, and since Bill was spending most of his time over this way, he recently decided to move here. As a result, he and his wife, Fommy, and youngster (George, two years old) have a delightful house, complete with babbling brook, in Scotch Plains, only about a mile from us as the crow flies. Last spring I attended a reunion of my fraternity chapter, Massachusetts Gamma of Phi Delta Theta, in Farmington, Conn. Warren P. Manger, is now with Farrel-Birmingham in Ansonia, Conn."

And that chums is all for November, 1951. — CLINTON C. KEMP, General Secretary, 29 Verlynn Avenue, Hamilton, Ohio.

Trust you all had a very pleasant summer. For some strange reason or other you all must have been, or still are, very busy for it has been months since your Secretary has received any communications from you fieldmen. Accordingly, any semblance of continuity is purely coincidental, for most of the news is as old as the proverbial hills.

While you were all active on either the water or the links this past summer, the stork and Dan Cupid were active, also. George and Betty Bickford became the proud parents of their first child, Susan Alice, on July 25 in Boston. All three are back home at the Bickford estate in Grafton, Mass., and rumor has it that Susan was born with more hair than her father has. Of course, this isn't hard to believe if any of you have seen Bick of late. Ann Chandler Street was born at 7:55 p.m. on August 24. Needless to say, Prexy Chick and Helen Marie are more than happy. Instructions received from Bill Shuman in early July indicated that he became a father for the second time the latter part of June. Good boy, Bill!

Back in May I received a short note from Don Kuehl at which time he indicated that he was to marry Carol E. Goodyear of Springfield, Mass., sometime during the month of August. Don is employed as a chemist at Cheney Brothers in Manchester, Conn., and is studying for his master's degree in psychology at Trinity College extension school in Hartford. Don is at present assigned to the 76th Infantry Division, ORC, as assistant division chemical officer. Under the date line of June 10, we were pleased to learn of the engagement of Jean Marie Kerby to Chris Boland. Since leaving Technology, among other things Chris has received a master's degree from the Columbia University School of Business. Sometime during the month of June, Eva Margarete Hochner became the blushing bride of Peter P. Agoston now of New London, Conn., but formerly of Flatbush, U.S.A. Pete is working for Chas. Pfizer Corporation in Groton, Conn. On June 3, Estelle Keller of Washington exchanged vows with Mort Silberstein of Cambridge who is an assistant professor of Mechanical Engineering at the Institute. Since this appears to be the day of short engagements, I would imagine that Dorothy E. Vitek and Bob Johnston have tied the knot by now. Bob is with the Standard Oil Development Company of Linden, N.J. The last two marriages we have to report are those of Anne Douglas Pollard to Captain Norman T. Stanfield, U.S.A., on May 12 and Beverly Jane Selig to Dr. Howard Mermelstein who is resident physician in pediatrics at Children's Hospital in Pittsburgh.

Before telling you of what little I remember of last June's Alumni Banquet, I thought I'd relate a few of the news items I might have. All of you that remember Chick Street at all will be pleased to learn that Chick and his 24-year-old Star, *Colleen*, have completed another successful year on good old Narragansett Bay. Chick won two or three of the Bay series as well as one of the five races in the Atlantic Coast Star Championships. I crewed for

big Chick a few times and believe me it was good for a few grins. Most of you probably remember our reporting the marriage of Franny Carroll to Virginia Lee last March. Well, Lieutenant, j.g., Carroll and his charming wife are now down in Trinidad where Fran is putting in a short tour of duty (involuntarily). Tod Howland who was with us back in '43 and who later graduated from Lowell Textile is with J. P. Stevens in Lawrence, Mass. Waite Stephenson informs me that Dick Cannaday is back in the Navy stationed at the Navy Yard in Brooklyn and that Curt Beck is on leave from G. C. Cabot and is doing graduate work at the Institute's experimental station at Oak Ridge, Tenn. Jeptha Wade recently received his law degree from Harvard and is now back at Technology working for the Division of Industrial Coöperation. A lot of the information contained herein may be old and out of date but you can rest assured that the following statements are the bitter truth. As yours truly pounds these class notes out on the typewriter, he occasionally has to stop to answer the telephone here at the Base duty desk in Portsmouth, N.H. Yes, I, too, am back on active duty with Uncle Sam. Needless to say, I am not too happy over my present state of affairs. I reported here on July 31 and it looks as though Portsmouth will be my home for several months to come. Undoubtedly, there are several other fellow sufferers that we do not know about. Why don't you fellow service men drop us a line so we can share the towel together?

Class Registration for Alumni Day, June 11, was as follows: Stephen E. Eppner, Jay W. Forrester, James L. Gurney, Charles J. Hooker, Jr., Richard L. McManus, Thomas J. McNamara, Robert N. Maglathlin, William H. Martin, William J. Meade, Jr., Warren H. Miller, Joan R. Moor, Peter L. Quattrochi, William H. Shuman, Clinton H. Springer, Waite H. Stephenson, Jr., Emily V. Wade, Jeptha H. Wade, Donald M. Whitehead, and Richard C. Winkler. As you can see, most of those present are the old Boston gang, but recognition must be given to people like Warren Miller who comes in each year from Buffalo (he works for his father), Waite Stephenson up from New York where he is still working for the elevator division of Westinghouse, and Pete Quattrochi who had to leave his automobile sales agency in Pittsfield, Mass., for one day. The rest of the gang are still doing about the same as last reported. It was really great to be able to see and visit with Jack Leonard who was a member of our Class until he joined the Field Service in 1944; it was also swell to see Ned Bowman'47 and Bob Ritterhoff'46.

Recent address changes indicate that Charles C. Buik, 3d, has left California and is now at the Naval Gun Factory in Washington, D.C. Joe Aguila is located at Central San Agustin via Caibarien, Las Villas, Cuba, and Jake Freiberger is now living at 4039 Capps Drive in Dallas, Texas. Some of you will probably remember last year's drive to get departed brethren back into the fold. The campaign was a success but the eight that did not return shall be contacted again.

Since you folks for the most part are unable to write, it is again necessary to

turn to the old green sheets we received over a year and a half ago. Charlie Johnson lives in Maplewood, N.J., and works for Socony-Vacuum Oil Company in New York City. Sing Leong married Wing-Yin Tung soon after graduation and is now in the textile business in Manchester, N.H. Shou Ming Loo is with the Wah Chang Corporation in New York. Cyril M. Harris reports that he exchanged vows with Ann Schakne back in July, 1949, and that he is happily employed by the Bell Telephone Laboratories in Murray Hill, N.J. Cyril McC. Henderson is the city planner out in Modesto, Calif. Charlie Hooker made the decision to go into the ministry of the Gospel back in 1945 and is now at the Presbyterian Church in Stillwater and Marksboro, N.J. Charlie married Mary Wavgh of Schenectady in September, 1947. Bob Edholm, who is with McDonnell Aircraft in St. Louis, married Mary M. Gagnon of Providence, R.I., in May, 1946. Bob Buxton of Philadelphia, who is with Alan A. Wood, Inc., was married to Dot Miller of New Brunswick, N.J., on May 27, 1950. Manuel A. Cadena is with U. S. Rubber in Havana, Cuba. Edwin Y. Chung, who received his master's in business administration at New York University, married Gloria R. Wong on December 27, 1949, and is now with Pyridium Corporation in Harriman, N.Y. Bob McKenna married Madelyn P. Dyer of West Medford, Mass., on June 10, 1950, and at last report was a student at Cornell University Medical School in New York.

Records indicate that Bill Mackenzie was one of the first to take the big step, for Bill and Jane L. McLaughlin'46 were united in November of 1945. They have a son, John D., and Bill is now with Penna Power and Light Company in Hazleton, Pa. Edwin Malloy has his own textile business down in Cheraw, S.C. Dick Martin and Netha Buemer of Glen Moore, Pa., joined together in September, 1948. They live in St. Paul, Minn. Max Means who is with Union Carbide and Carbon in South Charlestown, W.Va., says that he and Virginia are the parents of two daughters, Mary Ruth and Helen Lee. Jim Morrison is with Goodyear Aircraft in Akron, while John Murphy tells us that the Philadelphia Quartz Company is a good place to work. The last we knew, Hedley Patterson was with the MDC in Auburndale, Mass. Dave Richards and Elizabeth Lindenberger were married on October 30, 1948, in Troy, Ohio. Dave is with Owens-Corning Fiberglas in Newark, Ohio, and is the proud father of David H., born in October, 1949. J. Spencer Stan-dish, after "fighting" the war as a civilian at Technology, finally was drafted into the Army where he served about a year before going to work at Forstmann Woolen Company in Passaic, N.J.

Don Walsh is still with the Electric Wire and Cable division of the U. S. Rubber Company as far as I know. Don and his charming wife, Faith, were in Bristol for about six months back in 1948, so I saw quite a bit of them at that time. They have a daughter, Faith Louise. Sam Haines, the old Phi Kappa Sig, who joined the United States Marine program and transferred to Cornell has had a most eventful life. Sam, who is with the Reading Company in Philadelphia, not only has a B.S. from

Cornell, but also an M.S. from the University of Pennsylvania, both in civil engineering. Sam and Elizabeth Sawyer were married in July, 1948, and have a daughter, Carolyn Sawyer. Dick Welch has a fine position for he is the maintenance supervisor at the West End Brewing Company in Utica, N.Y. Edwin Whitaker writes that he has squeezed in quite a bit of Hammond organ playing between working at Sperry Gyroscope and raising a family. I must have mentioned it before but it is understood by this writer that it would take more than an atomic bomb to move Jim Hoaglund out of the West. Is that right, Jim? Jack Thompson, who married Lorraine Johnson in April, 1949, is employed by the Minnesota Mining and Manufacturing Company. John von Hemert, who lives out on the Island at Fresh Meadows with his wife the former Cristobel Locke, is with Socony-Vacuum. Jerry Lott works for the same outfit as Pete Agoston; namely, Chas. Pfizer and Company. Jerry and Peggy Harris were married in February, 1949.

As some may recall, last winter the thought of having nominal class dues was brought up. Don't worry, the thought has not been dropped; but upon the receipt of a letter from George McKewen last spring, we temporarily shelved the thought for further use. By now you should have all heard from either Class Agent Al Oxenham or one of his able assistants. I know you will all agree that we made a very poor showing as a group our first five years as members of the Alumni Association, let's show some great improvement these next five years. Have a pleasant Thanksgiving and we will see you all next month if you will send in some news! From now on it will be a pack of lies unless you forward your Secretary "the word," and you all know how well I can lie! — CLINTON H. SPRINGER, General Secretary, 44 Church Street, Bristol, R.I. Assistant Secretaries: WILLIAM J. MCKAY, 15 Barrett Street, Needham, Mass.; EDWARD STOLTZ, JR., Johns-Manville Sales Corporation, Koppers Building, Pittsburgh, Pa.

• 2-46 •

By far the greatest bulk of this writing will be taken up by reunion happenings. Therefore I'll save space and get right to reporting some vital developments. Bill Shea and Jean Bergin of West Roxbury announced their engagement; as did Ted Eliades, and Ruth VanDerBeck of Newark, N.J.; and Raold Bowers and Mary McFarland of West Chester, Pa. Classmates who took the big step last spring and early summer are strong in number (anyway), making one of the biggest crops so far reported. In Cairo, Ill., Ed Hill and Grace Rogers were married, with Fred Folberth'48, Warren Chapman, and Bob Shearer on hand as attendants. Reports have it that this crew wrecked as much havoc in Cairo as did flood waters in other Mississippi River areas. Jim Murphy and Janet McLaughlin of Garden City, L.I., were married in Ann Arbor, where Janet is doing work in the Michigan Medical School and Jim is completing requirements for his Ph.D. in aeronautical engineering. Imagine, Dr. Murph! Deane

Folsom and Oris Darling of Hardwick, Vt., were married at Holiday Home in Greensboro, Vt. Deane is with the Boston and Maine Railroad in Boston. Skipper Mort Bromfield and Eilene Dana of Dorchester married and honeymooned shortly after reunion time and before Mort reported for Navy duty. Shep Arkin and Doris Solomon of Scranton, Pa., were married at the end of July in Pennsylvania. Both Mr. and Mrs. are with the Navy Department in Washington. Warren Turner and Lucille Miller of Glen Ridge, N.J., were married in Bloomfield, N.J., with C. S. Lyon attending. Warren and Lucille missed the reunion festivities when he was recalled to Navy duty at the end of May. Art Schiff and Gladys Silver of Manchester, N.H., were married at the Manchester C. C. last April. Art, as we've said before, is a service engineer with the Industrial Rayon Corporation in New York. Cliff Sibley and Ann Mallan of Newton Highlands were married early in June, just in time to show up for the class banquet as newlyweds.

There are quite a few additions to family rosters to report and, oddly enough, three reunion committee members are among them. This must be a record of sorts because it represents a full 50 per cent of the married complement of that group. To take things in order: Roger and Elsa Sonnabend are the tenders of a daughter, Andrea, born on the 27th of April. Glen and Phyl Dorflinger added a son, Peter Glenn, to their family on May 3, and then took off for Houston, Texas. Your Secretary reports his second offspring, and first daughter, Emily Bryan, who was born on May 27. The arrival at this time upset my reunion plans somewhat, with the result that my attendance was, and hence on-the-spot reporting will be, a little thin. C. S. and Pat Lyon are the proud parents of Claire Patricia, born on August 27. Papa Lyon is just starting a three-year siege at the Harvard Law School.

New from here and there tells of Rick Adler's recall to active duty in the Navy; Seward Kennedy's passing the New York State bar examinations; Jim Chabot's getting his M.A. at Michigan; and Bill Buss's receiving his M.S. at Ohio State. To keep alive a good thing, I'll close these notes with a list of reunion attenders and save for next month some scribblings about the reunion itself and some details on people with whom I talked while on the run from daiquiris to diapers. At the reunion were: Stan and Pennie Young; Dave and Ann Moyer; Bob and Mrs. Ritterhoff, 6-46; Don Burke; Bob Wentsch; Herb and Jean Hansell; Frank and Mrs. Westcott; Bob Spoerl; Jim Moore; Ted Henning; Roger and Mrs. Bart; Bob and Barbara White; Jim and Mrs. Loweree; Harold and Betty Oakes; Chuck and Gloria Wellard; Rube and Di Samuels; Chuck and Charlotte Thompson; Seward Kennedy; Jim and Diane Craig; Rog and Elsa Sonnabend; Bill and Sandy Siebert; Ted and Cappy Heuchling; John Taylor; John W., and Nancy Taylor; Pete and Mrs. Wright, and baby; John and Priscilla Norton, 6-46; Bill and Mary Jackson; Jack Knauss; Don Anokay Hurter, 6-46; Ed Belcher, 6-46; Dave Black, 6-46; Gene

and Harriet Parish; John Gunnarson; Cliff Woods, 6-46; Dick and Joni Krahe; Lou and Mary Martin; Ned and Irma Spencer; George Ley; John Sullivan; John and Mrs. Wandrisco; Marshall and Mrs. Corbett; Robert Striker; Win Hayward; Bob Nelson; Stu Edgerly; John Maney '47; Ray Brown; Russ Dostal; Lou Barber '47; Ralph Berman, 6-46; Cliff and Ann Sibley; Norm Sas, 9-46; Jack Leonard, 6-45; Howie Auerswald; Dan Streeter, 9-46; John Gauraud, 6-46; Bob and Mrs. Fried; Richard Ballman, 9-46; Deane Folsom; Steve and Mrs. Eppner; John Green; and Mason Lappin.—JAMES S. CRAIG, Secretary, 387 Harvard Street, Cambridge 38, Mass.

• 1947 •

Reunion, people! That's the word for this year, and we're not going to let you forget it. Come next June, we'll have been making our way in the cold, cruel world for five years, and if ever a celebration were called for, that would be the time for it. Those of us who have been in the immediate area over the summer have been as busy as our schedules and consciences would permit in laying the groundwork for the planned portentous gathering after this first demi-decade as college graduates. Jim Phillips virtually deserted his wife and three youngsters to take the chairmanship of the provisional reunion committee, and I'm happy to report that we accomplished quite a bit in this past hot-weather season.

By now you will all have received our first general announcement concerning the dates and location of the reunion. Just lest you forget, it's to be at the Cliff Hotel in North Scituate—which is, incongruously, on the South Shore—over the week end of June 9 and 10. All sorts of entertainment are promised, including golf, tennis, swimming (private beach), softball, fishing, and drinking; so it really sounds like something to look forward to. Arnold Judson was the man who did a good part of the leg work as far as the hotel hunting was concerned, and Larry Powell contributed ably, too. Bill Crawford undertook to handle the publicity, which kept him a pretty busy man, as he was in the midst of preparations for his marriage to Virginia Stone Davis of Wellesley on October 6. Jack Hill lent a hand in the publicity department, and general committee work was carried on by Harl Aldrich, Ed Bennett, Norm Holland, Bob Kingston, Dick Knight, Larry Michel, Sid Smith, Bob Thirkield, and yours truly. Ed Bennett, by the way, is teaching psychology at Tufts College after receiving a Ph.D. from Purdue University.

Unfortunately, business affairs prevented me from attending the last Alumni Day festivities, but my spies report that 1947 was represented at the proceedings by Ed Bowman, Jerry Cox, Ray Grammer and his wife Virginia (Carter), Mort Loewenthal, Al Lambert, and Art Schwartz. Rey and Virginia Grammer combined a vacation here with Alumni Day, and Virginia visited me in the office one day with her young daughter. The baby son was home, so I didn't get a chance to meet him. On the above-mentioned business trip, I ran into Jim

Cooley quite by accident. I stepped off the plane at Hartford to stretch my legs, and Jim, who works at United Aircraft, was there at the airport to meet his parents who had flown in from Fairbault, Minn., for Jim's wedding on June 16 to Anita Gore of Port Washington, N.Y. On a trip down to Philadelphia last May, I spent a very pleasant evening at the home of Mel Zisfein and wife. Mel had just left his job at the Naval Aircraft Factory and had taken a new position with a consulting firm. Speaking of new positions, word has come that Mark Sullivan has transferred from the Union Carbide and Carbon Corporation, in Charlestown, W. Va., to the Atomic Energy Commission at Oak Ridge, Tenn. We hear also that Grekel has been promoted to senior chemical engineer in the research laboratories of the Stanolind Oil and Gas Company, in Tulsa, Okla. Dr. Farrell Gallaway has opened offices for the practice of optometry in Brockton, Mass. Farrell studied in Course X here, and then attended the Massachusetts College of Optometry.

There are the usual number of engagements and marriages to report after the summer lapse. Russ Johnston is engaged to The Review's very able class notes editor, Ruth Alice Phillips of Somers, Conn. Also engaged are Dick Miaskiewicz and Margaret Annamarie Monstrola of Jeanette, Pa.; Bob Lombard and Marjorie Frances Callahan of Drexel Hill, Pa.; Dick Kondolf and Dorothy VanCaeseele of Farmington, N.Y.; Jim Kyle and Ethel E. McCauley of Buffalo, N.Y.; Bob Phipps and Ruby Sundeen of Manchester, N.H.; and Dave Blattner and Doretta Leigh Steinway of Mountain Lakes, N.J. Marriages we have word of are those of Will Freyberger and Ruth Leonard of Melrose, Mass.; John Dimodica and Grace Marion Marley of Malden, Mass.; Joe Farrell and Winifred Therese Marie Sieger of New York, N.Y.; Terence Mullen and Edna Jane Esposito of Larchmont, N.Y.; John Fennessey and Anita M. Palmer of Cambridge; Al Richardson and Phyllis Elaine Brosnan of West Somerville, Mass.; Joe Labov and Carolyn Joy Davis of New Haven, Conn.; Hal Burton and Dorothy Ann Rosiene of Norwich, Conn.; Chuck Whelan and Nancy Eleanor Johnson of Belfast, Maine; Ed Doyle and Ferne Carson Erickson of Bangor, Maine; Mal Groves and Jean Noyes of Weston, Conn.; Don Fritch and Nancy Glover Bigelow of Winchester, Mass.; Flavio Reis and Meredith Ann Hinsley of Worcester, Mass.; and Vince McKusick and Nancy Elizabeth Green of Leominster, Mass. Vince, by the way, is now law clerk to Chief Justice Learned Hand of the U. S. Court of Appeals in Washington.

Just as these notes were going to press, Bob Hildebrand showed up for a brief chat. He had come East with his wife Ginny (Ferguson) and year-old son, Bruce Robert, on a combined business trip and vacation from Seattle where he works for Boeing. Unfortunately, I didn't get a chance to see Ginny and the baby, but Bob reports they are both tiptop. Speaking of babies, we have two births to report: Jim Phillips' third son, Christopher Reynolds, born in July; and Marty Schwartz' fourth child, and third daughter, Carol

Marie, born in September. — CLAUDE W. BRENNER, *General Secretary*, Room 33-316, M.I.T., Cambridge 39, Mass.

• 1948 •

The passing of summer without a single issue of these class notes has resulted in quite an abundance of data, some of it dated, to be sure, but all about '48 men, and thereby constituting a boon to your too-often-newsless Secretaries.

After all the weddings previously reported, it is hard to believe that more than one or two of us were still unattached; but the following tabulation of summer engagements and marriages should prove otherwise. Way back in April, George Dundon was wed to Edith Schweser, and the couple are now making their home in Rochester, N.Y. Other early spring weddings were those of Ellis Barron to Laurel Katz; Thornton Smith to Shirlee Wakelee; Lieutenant Ernest Hader to Dorothy Levy; Robert Shooshan, currently an engineer with Pratt-Whitney Aircraft, to Nancy Carrington; Ronald Kallman to Phyllis Reed; William Allen, a post-M.I.T. graduate of the Military Academy at West Point, now a lieutenant in the Air Force, to Carol Gautreau; Thomas Faria, an employee of the Engineering Research Corporation of Riverdale, Md., to Carolyn Stannard; John Gilchrist, a student at the New York University College of Medicine, to Joan Miller; Clifford Ham to Marilyn Packard; William Wells, at present a civil engineer with the Sandia Corporation, an affiliate of the Atomic Energy Commission, to Janet Mary McBride; Louis Curdo, who is working for his M.S. at Boston College, to Elinor Wolfe; John Benjamin, a research associate for the State of Connecticut, to Nancy Elizabeth Soller; Barrett O'Neill, still at Technology working for his Ph.D., to Hope Franklin, a niece of Professor Norbert Wiener's of the Institute; Frank Heilenday, an aeronautical engineer in the flight research division of the Cornell Aeronautical Laboratory in Buffalo, to Joan Brandmeyer; Richard Berry, employed as a development engineer at the Rogers Corporation, to Louise Spaulding; and Robert Reed now associated with the Hazeltine Corporation, Long Island, to Lorraine Alice Christian.

Engagements, most of which by this time have probably culminated in marriage, include the following: Tom Cantwell, who received his master's in June from the Harvard Business School, to Janice Bowman; Leonard Salter, currently a radio chemist, to Eleanor Tibbets; Vaughn Beals to Eleanore Woods; Leonard Stutman, a student at the University of Rochester Medical School, to Jeanne Soblen; Leslie St. George to Marion Ojala; Milton Pohl to Jane Goodman; Donald Kuehl to Carolyn Good-year; Emerson Callahan, a member of the technical staff of Bell Telephone Laboratories, to Virginia Walker; William King to Carol Thorne; Verity Smith to Marcia McKee; Alexander Aldrich, a second-year man at Harvard Law School, to Elizabeth Hollins; Orville Bean to Constance Austin; Norbert Andres, Ensign, U.S.N., to Pauline Moran; Raymond Barnstone to Helen Phillips; Pfc. Charles Dolan to Joan

Vollmer; Clyfton Bourne, employed by the General Electric Company in Syracuse, to Joy Clark; Henry Kohl, now a chemical engineer in the fabrics division of Du Pont, to Annie Atkins; Mark Connnelly, a research engineer at Technology, having received his master's degree in physics from Brown University, to Helen Cooke; Herbert Lipson, at present engaged in research as a physicist at the Naval Research Laboratory in Washington, to Gloria Freedman; Thomas Monroe to Gwendolyn Gates; Lieutenant (j.g.) Joseph Stoutenburgh to Sarah Halsey; Arthur Kuljian, secretary of the Kuljian Corporation, engineers and constructors of Philadelphia, to Lucille Mardoian; James Bagnall to Alice Lidwin; Robert Auty, who joined the Dow Chemical Corporation after receiving his doctorate in June from Brown University, to Beatrice Powers; and Milton Slade, a member of the Division of Industrial Coöperation at the Institute, engaged in government sponsored research, to Jean Hupper.

Babies too are in the news although, from their small number, it is suspected that some modest fathers have failed in their solemn duty to notify their Class Secretaries. Your Assistant Secretary, father-of-a-year Richard Harris, in a letter to your bachelor Secretary remarks: "Babies are really a pleasure. I recommend one to you at the earliest possible legitimate moment." Son: Jonathan Tyler Harris. A letter from Henry Warner in Union, N.J., also advises us of a birth; that of a baby daughter, Dorothy, on March 29. Henry's marriage to Ina Finkelstein three years ago was one of the first these class notes had the pleasure to announce. A letter from Harry Meyer, XV, advises us that he too has been a Pop for some time: daughter, Janet Claire, born September 22, 1950. Until May of this year, Harry continued in the job he took upon leaving Technology; that is, industrial engineer with the Maytag Company of Newton, Iowa, doing time, methods, and cost work. But with an eye to getting into industrial relations, he took a position as salary analyst in the Personnel and Industrial Relations Department of Minneapolis-Honeywell. The work consists largely of salary evaluation for the company's 700 engineers and technical people who, it seems, are organized into a local union — putting added interest into Harry's new job.

A professional card was received from Phil Bragar advising us that he is now plant superintendent of the Kaiser-Frazer Corporation's, Portland, Ore., assembly division. Martin Starr sends a card and letter which I quote in part: "Wasn't it we who said a few years ago that three years out of Technology and we should be earning a conservative figure of, say, 10 grand a year; five years and we'd have the world by a string. Well, there are still two years to go. On those two years I am pinning my hopes, for at the present, I am working for my doctorate at Columbia University, and there is nothing world shaking about that. Got my M.S. in June, which was accomplished as part of the faculty of the department of industrial engineering, but it was one of the most unusual degrees that they have handed out,

for my field is industrial design, and that required skipping between departments and including many unorthodox courses. I'm still part of the faculty which means I get paid for going to school, doing research work, teaching lab courses, and so on. At the same time, I am doing design consulting on the side, and I enclose my card for verification. I design à la Starr packages, labels, products both mechanical and electrical, plant interiors, and anything else you can think of. It is a lot of fun for me, and I think I have something there ... what I need is the one break, and then I think I can really get it rolling. Perhaps you can give me a push in the right direction. I'll gladly give estimates and discuss design matters with interested parties."

A most stimulating surprise was a letter from Lewis Blodgett in far off Iceland: "This is the first time I have dropped a note to you, the General Secretary of my Class at M.I.T., but thought I would just to show how some of the graduates have been getting around. I was prompted on seeing a copy of *The Technology Review* in the Reykjavik Library, which goes to show how our alma mater's magazine gets around. I recognized the names of several classmates in your section of class activities. Shortly after I graduated from M.I.T. in the Class of '48, I accepted a position with the Weather Bureau at Keflavik Airport, Iceland, where I have been ever since. Next month (July) will mark three years in Iceland. It has been quite a long time since I've seen much of the United States, but now believe this will be my last year here. The Army will be taking charge here soon. Still single, but may yet take an Icelandic girl back. The Icelandic girls are known for their good looks and intelligence. So this is a nice country in some ways, although I cannot go overboard on the climate. My work here is mainly issuing forecasts for transatlantic flights using this terminal as a steppingstone on their way across the ocean. It is quite a bit of work, with enroute winds and weather, terminal forecasts, and so on, to worry about. Not quite what I was trained to do in Course XIX, but interesting and stimulating just the same! And one of the most stimulating things is a trip to nearby Reykjavik, especially for a single man! After three years with an average of two days off a week, one gets to know the town and its people pretty well. I haven't had the occasion to do much traveling throughout other parts of Iceland, but have seen Thingvellir (sacred to Icelanders as the site of their ancient parliament with a history extending back over 1,000 years), Geysir (the Icelandic Old Faithful), and Gullfoss, a beautiful waterfall. But it will be nice to get back to one's own country again, which I expect to do in a few months. And who knows, if I am at a convenient place for doing it, I may even join an M.I.T. alumni club!"

And at the bottom of the mailbag, we find a letter from Ken Brock, who has just become advertising and sales promotion manager for the electronics division of the Gabriel Company in Cleveland. Ken writes: "I spent my vacation on one of these cruises to Nassau and Bermuda. Frankly, it was great. Had cocktails with

Ben [Brettler], S. J. [Adelstein], and Bill Katz last week. They're living in Lexington for the summer in the home of an architect who is working for four months in South America. Ben has just returned from Switzerland, Paris, and London on business; Bill is at Ionics, Inc.; and S. J. is doing research at Technology before returning to Harvard in the fall."

The clipping service has remembered us also with the following bits of vocational information: Mary Clark, a '48 co-ed, is an electronics engineer at Fort Monmouth's Army Signal Corps Laboratories. Another '48 co-ed in the news is Judith Turner, "a former model," who has become a successful architect. Ralph Wentworth won first prize in an essay contest sponsored by the Engineering Societies of New England: the topic, "A Postgraduation Five-Year Plan for the Engineer." Pao Chi Pien has received his Ph.D. from Ohio State, as has Robert Kingston '47 from M.I.T.

If you enjoyed reading these notes, write and tell us so; if not, write and tell us that too, but just put in a note about your own doings. — WILLIAM R. ZIMMERMAN, General Secretary, c/o Kurt Salmon Associates, 3000 Albermarle Street, Washington, D.C. RICHARD H. HARRIS, Assistant Secretary, Lovell Road, Holden, Mass.

• 1949 •

Once again the names of 49'ers appear on the military rolls. Robert Smith has been promoted to captain in the Marine Corps and is now in California awaiting further orders. Harry O'Connor, Pacific Division, Military Air Transportation Service, Hawaii, received the Navy's commendation ribbon for "meritorious achievement as Flag Lieutenant and Staff Watch Officer on the Staff Commander Carrier Division Three embarked in the U.S.S. *Valley Forge* during operations against the enemy from 2 June 1950 to 19 November 1950." William Rinn, having completed basic with the 169th Amphibious Truck Company, was assigned to the Transportation Research and Development Station at Fort Eustis, Va. Alfred Kenrick was evacuated from Hungnam in December with the 10th Corps after having served four months in Korea. Tom Toohy completed training at Little Creek, Va., and was assigned to the U.S.S. *Rockbridge*, a transport ship. Colonel Peter Hyzer, who commanded the Third Engineer Combat Battalion with the 24th Infantry Division in Korea, has returned to active service to be the head of Norwich University's R.O.T.C. unit in the Corps of Engineers.

Two additions: George Kunstadt's son, Robert, on January 10 in Boston and Jan Hoegfeldt's daughter, Karen, on May 17. Congratulations! Jack Baker, who had been an instructor in Saco Lowell's apprentice program, was appointed an instructor at Lowell Textile Institute where he is presently working for an M.S. George Shultz, Assistant Professor of Industrial Relations (M.I.T.), coauthored *The Dynamics Of A Labor Market* with Charles Myers. It was his second book, a study of the dynamics of a small New England labor market with emphasis on the effect of unemployment. It concluded

that the labor market responds to dynamic influences in a predictable pattern. Richard Saville, general sciences teacher at Barre High School (Barre, Mass.), received a General Electric Science Fellowship for study at Union College. This is a special program to familiarize teachers with the latest developments in chemistry and physics. Bruce Campbell was named director of the Massachusetts Safety Council's Community Highway Safety Program. Bruce worked on the Boston Central Artery with Fay, Spofford, and Thorndike. Edward Davin is with the Richmond Exploration Company, a subsidiary of Standard Oil, in Venezuela, as a seismic interpreter.

Registered for Alumni Day were Ernest Barriere, James Christopher, John Ely, Richard French, John Goppelt, Warren Houghton, William Jones, Philip Lynn, Francis McCarthy, Thomas Martin, Howard Millard, Thomas Moranian, Leonard Newton, Alan Postlethwaite, Walter Seibert, Kemon Taschioglou, Edward Walz, Fred Wissenbach, and Eugene Woodward. — Kee Taschioglou sent me some notes, to wit: Jim Christopher is in an executive training program at the First National Bank and was engaged to Dorothy Parsons on June 2. John Goppelt was with Bendix Radio for a year, is spending the summer working at the National Institute of Health in Washington, and will start medical school at the University of Pennsylvania this September. William Jones is at Technology as an assistant in the Division of Industrial Co-operation. Leonard Newton is doing management engineering in the Hartford office of Ekhom Associates. Newt was instrumental in the reorganization of the M.I.T. Club of Hartford, to which he was elected secretary.

Engagements: Hermann Allen to Barbara Smith of Pittsburgh, Pa.; Norman Andrews to Margery May of New Britain, Conn. He is with the Hersey Manufacturing Company of Boston. Jack Baker is engaged to Mary Jesson of Dedham, Mass.; Robert Barrows to Patricia Greenhalgh of Wellesley Hills, Mass.; E. Milt Bevington to Elizabeth Rickey of Milwaukee, Wis.; Richard Clark to Shirley Ritcey of Belmont, Mass. Dick is working for Goodyear Aircraft Company, Akron, Ohio. Edward Dinowitz is engaged to Elaine Sadow of Plymouth, Mass.; C. Clifford Gillette to Caroline Bruner of Petersburg, Va.; Daniel Greenbaum to Patricia Duncan of Harrisburg, Pa. Dan works for Madigan Hyland, consulting engineers. Robert Grott is engaged to Alice Doe of Mt. Dora, Fla. Bob is with the J. O. Ross Engineering Company of Boston. John Knowlton is engaged to Mary Chapman of Detroit, Mich.; Howard Kothe to Mollie Hubon. Howard is with Cities Service and is attending Brooklyn Law School. Harry Lambe is engaged to Dolores Kobler of Cheektowaga, N.Y.; Frank Lane to Elizabeth Scott of Burlington, Vt. Frank is teaching biology at Middlebury College. Richard Levitt is engaged to Muriel Young of Mattapan, Mass. Dick is stationed at Lackland Air Base, San Antonio, Texas. Ross McKinney is engaged to Margaret Curtis of North Tarrytown, N.Y.; Bernard Rosenberg to Faye Goldner of South Orange, N.J.; Yenwith Whitney to Muriel Johnson of New York City. He is with Republic Aviation Corporation and also is working on his M.S. at Polytechnic Institute of Brooklyn. Dave Yeomans is engaged to Barbara Black of Cleveland, Ohio.

Weddings: Richard Allen to Barbara Joyce on June 16 in Newport, Conn. Dick is with the Hamilton Propeller Division of United Aircraft. Paul Bercow was married to Gretna Epstein on July 15 in New York City; Frederick Berg to Alice MacQueston on July 28 in Wakefield, Mass. Fred was with the Ford Motor Company before he was recalled to the U.S. Navy on August 6. Jim Berman was married to Peggy Tenenbaum on May 27 in Lawrence, Long Island; Robert Breese to Margaret Miller on June 16 in Harrisburg, Pa.; Kemon Taschioglou and Chuck Holzwarth were ushers. Joseph Casey was married to Dorothy Thompson on April 21 in Dorchester, Mass.; Eugene Clark to Phyllis Darrow on June 30 in Appleton Chapel, Harvard University. Gene received his M.B.A. from Harvard Business School in June, 1951. Joseph Cobb was married to Elizabeth Norberg on June 16 in Lynn, Mass. He works for M. W. Kellogg Company, Jersey City, N.J. Best man was Robert Hamman, and Robert Witherell was an usher. Leo Dunn to Helen O'Brien on May 19 in Cambridge, Mass.; Herbert Federhen, IV, to Verne LaPorte on June 2 in Newton Center, Mass. Jeremy Lewis and Edward Kerwin were ushers. Robert Harper was married to Dorothy Medford on April 28 in Delaire, Del.; Charles Holzwarth to Shirley Sommer on June 23 in Rockford, Ill. Kemon Taschioglou was an usher, and Dave Hardin and Bob Breese were present. Paul Hubbe was married to Nancy Allen on August 23 in Springfield, Mass. Paul is with the Great Northern Paper Company in Millinocket, Maine. Charles Hummel was married to Anne Childs on May 19 in Flushing, N.Y.; Paul Johnson to Ruth Durnan on June 23 in West Roxbury, Mass.; David Kellom to Jean Purinton on June 16 in Salem, Mass.; Richard Lang to Betty White on June 9 in Watertown, Mass. Robert Kellogg was best man and Joe Vitka and Robert Whitman were ushers. William McDonald was married to Priscilla Brown on June 8 in Salem, Mass. He is with E. I. du Pont in Dana, Ind. Donald Merriman was married to Jean Robertson on January 19 in New York City; Harold Proctor to Pauline Wilkins on June 16 in Danvers, Mass. Harold is an electronics engineer at Sylvania Electric, Boston. George Smith was married to Ardith Zervas on June 30 in Boston; Paul Weamer to Virginia Looney on April 7 in Belmont, Mass. — CHARLES WILLETT HOLZWARTH, Secretary, 33 East Empire Street, San Jose 12, Calif.

• 1950 •

From the looks of the stack of mail and newscavings on my desk, I'd say that the men of the Class of '50 were a bunch of busy beavers over the summer. First of all, a report on the men who were lucky enough to attend Alumni Day. Twenty-six of our colleagues were lucky enough to get away from the office or camp and indulge in some good old-fashioned reunion spirit. The listing and activities follow:

Dick Bersin, who is working for Tracer Lab; Don Bishop; Bob Bissell, working for New York Air Brake in Watertown, N.Y.; Roger Bond; Jim Cass, working for Fay, Spofford and Thorndike in Boston, but expecting to go to Fort Belvoir in July as a Second John (his wife was expecting in August, so I guess by now Jim has passed out beaucoup cigars); August Doering; Henry Fournier; Harold Frost; Lieutenant Mel Gardner, who was called in last spring and is now stationed at Fort Monmouth, N.J., along with Lou Morton and Dan McGuinness; Thomas Godfrey; Ralph Hall; Mike Hannoosh, who is with Sylvania in Salem; Carroll Johnson; John Kern; Carl Long, who is still at M.I.T. working for the Civil Engineering Department; Fred Lorenzen, Jr.; Charles Magarian; Bob Mann, who is staying on at Technology working for the Mechanical Engineering Department; Carl Mellin, who is busy building chairs for F. W. Lumbard in Gardner, Mass.; William Nichols; Saleem Rizk; John Simons, Jr.; Jim Turner, who was undergoing basic training at Fort Dix, but managed to get the week end off; John Wilbur, Jr., who is still working for the railroads; John Willard, Jr., who is fooling around with a leather venture; and, of course, yours truly, J. T., who managed to broadbeat his C.O. into a three-day pass.

The events of the day are listed in the July Review, but here's a few notes I gathered while there. When I got back to camp the next morning I had notes scribbled on everything imaginable: menus, napkins, envelopes, ticket stubbs, and I even had some notes in my pocket notebook. After a few aspirin and a little sleep, I managed to translate the notes. With no particular order or sequence, here's what some of the boys are doing for a living. Ross Quincy is teaching at the School of Chemical Practice at Bangor, Maine. Ed Kruse is doing research at the University of Pennsylvania. Harvey Nickerson is with Resistaflex. Cliff Swanson is engaged to an M.I.T. secretary, Lois Graham, and is working at the Research Laboratory of Electronics himself. Fred Borromeo went back to the Philippines. Dave Kret is a professor at the Pennsylvania Military College. George Neiss is studying marketing at Temple University. Chuck Herbert went to the Class of 1951's Senior Week while on vacation from Behr-Manning. Natalie Adelman is at the Harvard Business School. Bob Cesari was called into the Reserves and is stationed somewhere in the States. Paul Berger and Tom Wetmore are working for the Central Artery Commission in Boston, Mass. Al Craig is with the research section of the Soil Conservation Section of the Everglades Experiment Station in Belle Glade, Fla. Arthur Fynsk received his masters degree and is going to work for Du Pont in Wilmington. Al Petrofsky was called to active service with the Corps of Engineers. Max Schubert is with the Orinoco Mining Company in Ciudad, Bolivar, Venezuela. Don Starner received his masters degree and is working with the Fuller Company. Bill Arnold is with the Raymond Concrete Pile Company. Dave Hellstrom is piping gas to Boston via the Northeastern Gas Transmission Company. Bill Price is deep in the heart of

Texas with the Texas Highway Commission. Rick Rorschach was studying petroleum engineering at the University of Oklahoma. Jim Watt was working for the Boston Central Artery, but the draft board caught up with him and he was with the Corps of Engineers at Belvoir the last time I saw him. Al Dell'Isola was at Belvoir for a two-week summer course and then he took off for a soft civilian job in Casablanca. John Cord is doing research work at Technology. Ed Cohen, after receiving his masters degree and making a coast-to-coast tour of the country, will settle down in July. He's accepted a position on the M.I.T. staff as assistant director of the School of Chemical Practice at Buffalo. Frank Kellogg retired from his position as assistant to the director of admissions to become a vagabond or, to quote him, "just get a general education about the world." Charles Levy, after getting his masters at the University of Missouri, is now a bureaucrat working for the government at Wright Field near Dayton, Ohio. Art Savoth was at Columbia University doing graduate work.

On my way up to Boston over the alumni week end, I stopped off at Stamford, Conn., to marry off the "Old Tom Cat" of W.M.I.T., Lieutenant Jim Baker. Jim and Gay Cover were married at a very impressive ceremony, and after a pleasant reception, I sent them on their way west to St. Louis, Mo., where Jim is stationed at the Medical Supply Depot. But Jim was not alone this summer. Complete returns are still not in, but from all indications I'd venture to say that more and more Tech men are getting married each day. Alison Ulshwas was wed to Peter B. Baker in June, and the couple plan to live in Plainfield, N.J. Rella Murr and Alan Bates were wed in June, as were Jeanne Shay and Alfred Bloom; and Elinor Oshry and Beryl Borsook. Pfc. Michael Celentano, who is now stationed at Fort Benning, Ga., was married to Ellen Mary Unwin. Mary Louise Wilson and Dean Stockett Edmonds, Jr., were married, as were Jane Lillian Connington and Robert H. Elliott, Jr.; Astrid Margaret Olsen and Robert Erickson; and Elizabeth Jean Voorhies and Franklin Fagan. Lieutenant Daniel E. Flanders is now stationed at Vance Air Force Base, Enid, Okla., and he and his new bride, the former Charlie Victoria Busterare, are now living at Enid. A note in Ed Kruse's letter tells us that he received an invitation to the nuptials of Clarelyn Allen to Lieutenant Roy Hale, United States Air Force, on Saturday, June 23, at the Keesler Air Force Base Chapel. Dave Matheny was best man and Dick Bersin was an usher at the wedding of Caxton Foster and Mildred Downer. Some more June weddings include those of Mary Teresa McKenna to Charles H. Gaudette; Ailene Pressman to Eli Goodman; Barbara Gertrude Wilber to Sigmund Holmgren; Priscilla Kamen to William W. Keefer; Joan Audrey Wright to Robert A. Kovacs; Vera Heineman to Sal Mashal; and Eloise Martell to Roger W. Milligan. John MacMillan returned to this country after a year of graduate work on gas turbines at Imperial College, London. He wed Kay Richards in London in March and they had a three-week honey-

moon in Europe. They are now living in or around Schenectady, unless Mac has been called into the Army. Marjorie Scranton Platt and Kent Moore are now husband and wife. June Ruth Smith was wed to Harold Noreen, Jr., who is working with Carpenter and Paterson, Boston. A double-ring ceremony was held last June, and Kenneth Roberts took Norma Janet Lindstol as his bride. Ken is in the U.S. Army Department of Research at Watertown Arsenal. The Boston University School of Medicine now has a husband and wife team in the persons of Mr. and Mrs. Searle B. Rees. Mrs. Rees was the former Davida Ivy Hotz, and both Mr. and Mrs. attended Boston University graduate school. Joseph Regan and Norma Johnston were married at St. John the Evangelist Church in Swampscott, Mass. Joe is now with Raytheon Corporation in Newton, Mass. Marilyn Ruth Wolk became the bride of Alfred Susskind; and, last but not least is a note from Cecily M. Cannan, a co-ed from Course VII. She was and still is working at the Sloan-Kettering Institute for Cancer Research. A hospital romance sprang up between Cecily and Dr. Henry M. Selby, a radiologist who was attached to many New York hospitals, including the Memorial, New York, and the Medical Arts Center Hospital. They became engaged and by the end of August she became the Mrs. Henry Selby.

On the ready line waiting for the happy day are the following couples who have announced their engagements: Gertrude Elaine Rogers and John Jay Drysdale; Patricia Pitcairn and Robert Edgar; Regina Marie Howe and Walter Gailus; Janet Goff and John Gutai, Jr.; Antonia Bissell to Walter J. Laird, Jr.; Joan Lauritzen to Joseph J. Miano; Margaret Mary Coleman to Ensign Daniel McGuinness; Mary Suzanna Prettyman to Richard Potts; Katherine Petrucci to Frank Ruccia; Lois M. Graham to Clifford Swanson; Gail Cowan to Leland B. Ticknor; Lois Mae Hoy to Franz Tyaack, who is now with Arma Corporation of Brooklyn; Clara Lorraine Younglove to David M. Uline; and Martha Mae Lewia to Roger Whitley.

A card from Sid Self invites all Niagara Falls honeymooners to drop in on him at 625 3rd Street, Niagara Falls, N.Y. Sid is working for Hookers Electrochemical Company doing cost analysis. Bill MacDonald is working at the same place and Chuck Renn and Brian Moore manage to stop in to visit Sid. I wish I had a cent for every mile Chuck Renn has traveled this past year. No matter who I hear from, be they from Boston, Washington, D.C., California, Europe, or the South Seas, the writer has just seen Chuck or else Chuck had just passed through. I think he has a spare jet engine tucked away in his back pocket, but he certainly does get around. Herb Limmer finished his last exam (final exam that is) last May 28th and he sat down to write the following news: "Henry Simmons is a second lieutenant in the Air Force. Emile Harp has quit his job in N.Y., uttering the following heresies for a Course XV man: 'Who wants to do cost analysis anyway.' He wants to go to Graduate School to get a degree in Chemical Engineering. Don Rose is another one of our heroes. He is stationed at Fort Mon-

mouth teaching radar. Such a job for a Course XV man. I, Herb Limmer, personally expect to hand in my thesis for my S.M. on July 6 because I am going to be in the Army on July 7."

A letter from Cyprus from Dimitrios George Dimitriou tells of his marriage to Anne Nicholson of Belmont last April, and of his trip back to Cyprus via a two-month tour of Europe. He is now a technical advisor and shareholder of the Cyprus Umber Industrial Company. Richard Keller writes that his family was increased by one last April when a daughter, Karen, was born. Dick received a M.S. from the University of Wisconsin and will teach for the next school year at the University of Mississippi before going back to M.I.T. for his Ph.D. Ross Karlson was working with America Bosch in Springfield, Mass., until he was "chosen." It is now Private Karlson of Aberdeen Proving Grounds in Maryland. Fred Rayfield and Ross's old roommate at school, Dick Potts, are also at Aberdeen with Ross. Nathan H. Cook was one of the 12 winners of General Electric Company's Science Research Fellowships. He will continue his studies at Technology. Jim Kennedy is now the southern editor for *Textile World*, a very influential textile trade paper. Frank Fulton has completed the Army pilot training course at Reese Air Force Base, Texas. Francis J. Winiarski was called back into the Army. William Clemmons and wife announce the birth of their first child on May 17. The baby boy has been named David Alan. I suppose Len Caro also passed out many cigars in August. I last saw Len in June and he and his wife were expecting to hear the pitter patter of little feet in August. Last spring I reported the unfortunate death of Lieutenant John C. Westcott in Korea. John came from a long line of Tech men. His father, grandfather, and brother all graduated from M.I.T. and John was at the Institute for over two years before he left to enlist in the Army. He was commissioned into the Corps of Engineers in 1949 and was assigned to the 13th Engineers Corps, Seventh Infantry Division. He was lost last December during the battle of the Chosin Reservoir. There is a 240-foot Bailey bridge now in Korea that prominently wears the plaque, "Lt. John C. Westcott Memorial Bridge."

Reginald A. Krystyniak was working with the Frederick Connor Plastering Company doing estimating work before Uncle Sam caught up with him. He took his basic training at Dix and he is now assigned to the Transportation Research and Development Station at Fort Eustis, Va. Lieutenant Fred Kurzweil was at Keesler Air Force Base with Roy Hale for a while, roommates as at Technology, but Roy's marriage will alter all of that. Ed Berninger writes the following report on the Alpha Mu's: "Howie Larsen received his M.S. in chemical engineering at the University of Illinois this September, after which he is planning to work for Shell in Richmond, Calif. Since Howie is a non-veteran with an R.O.T.C. commission, I wouldn't bet on his remaining a civilian for too long. Jack Reeves has finished one year at Pennsylvania Medical School and will be returning to Philadelphia this fall

after spending the summer in Hazard, Ky. Dick Eccles spent nine months in the General Electric test course (mostly on gas and turbine work at Lynn) before being called into the Service in April. He has been stationed at Wright-Patterson Air Force Base as a second lieutenant. Dick Lemmerman wife Peg, and daughter Patricia, are living near Hartford where Lem is vice-president in charge of engineering, research, and development for his Dad's company, Industrial Sound Control, Inc. Harry Johnson is working for Industrial Sound Control in Hartford. Gordon A. Evans was at Cornell Law School at last report. Dick Koenig was married to Margaret Irby (M.I.T.'51) this June. Dick was called to active duty and was stationed near Boston as a second lieutenant in the A.S.A. when last heard from. John Kocher, ex-'50, was drafted last summer and is now a corporal in the Engineer Corps, whereabouts unknown. John Lang '51 (ex-'50) was married to Gloria Evans of Tulsa in December, 1950. They are now living in Ponca City, Okla., where John has a fine job in the Conoco Engineering Department. Stener Rosenberg had to return to Norway, but is now back in the United States. Lenny Smith is working in New York. As for myself, Ed Berninger, after a profitable and enjoyable year doing heat and power design and development for Procter and Gamble in Cincinnati, the Army Ordnance Corps called me for a two-year hitch. I'm stationed at Albuquerque, N.M., as a second lieutenant."

I want to thank all you people for your interesting letters and comments. Keep up the good work and keep the mail coming.— JOHN T. WEAVER, Secretary, 1772 East Tremont Avenue, New York 60, N.Y.

• 1951 •

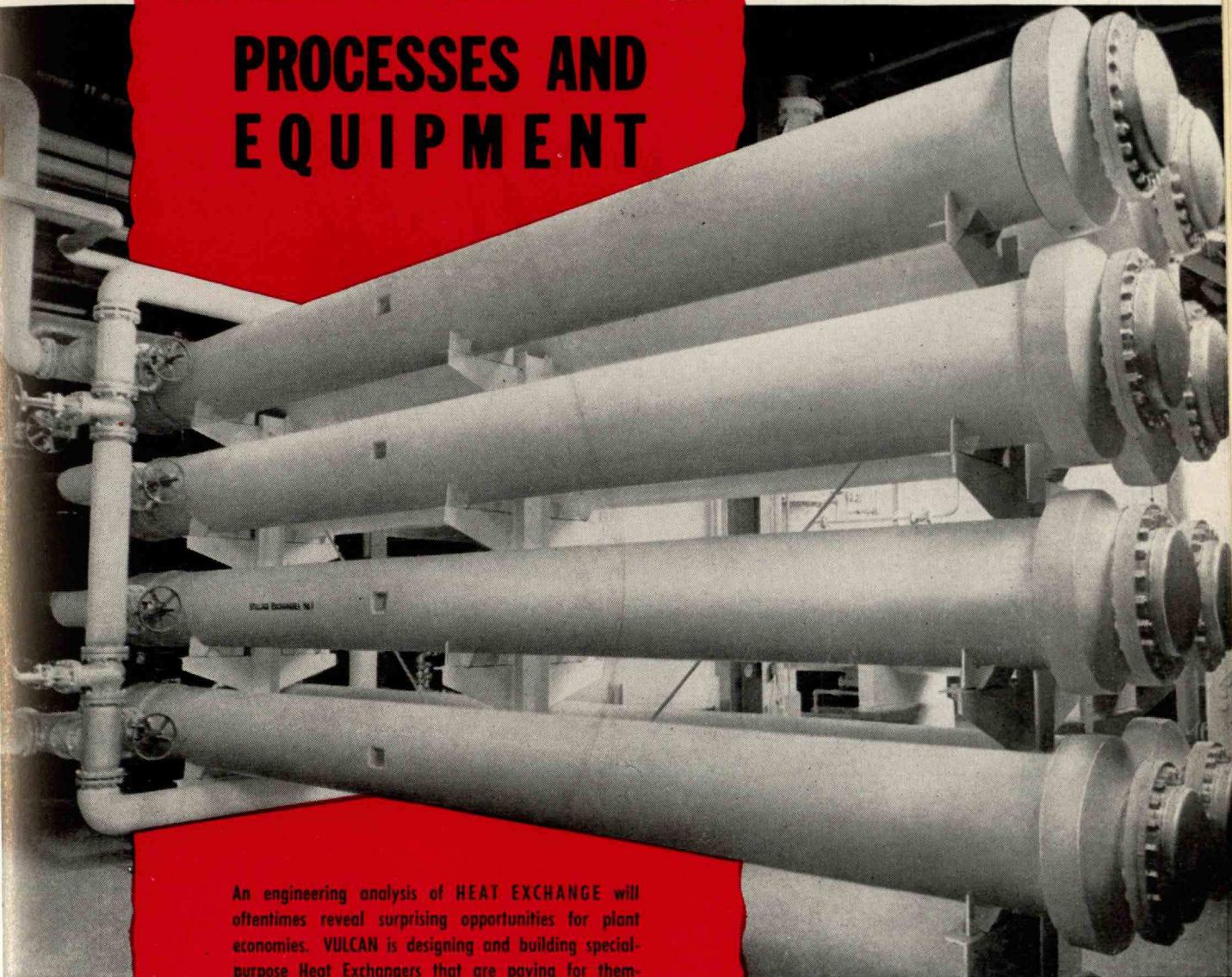
Judging from the many news clippings that have arrived, it looks as though the Class of 1951 is not letting the dust settle under its feet since leaving M.I.T. Your Secretary used the weight system (some say this method was used by some professors to grade term papers) to see which activity outweighed the others as to detailed coverage. Needless to say, news of marriages exceeded the other events by the ratio of three to one. This result illustrates the point that M.I.T. men can get jobs as well as gals—Harvard take note!

Roland F. Beers, Jr., who received his Ph.D. in biochemistry this past June, was awarded a \$4,000 fellowship by the American Cancer Society to continue research work at M.I.T. A Sloan Fellowship in the Department of Business and Engineering Administration was received by Carl Atherton Blanchard, Jr. Averil Chatfield has gone to Columbus, Ohio, to do research work at Ohio State University. Bill Gilbert is now at the University of Minnesota, where he has a teaching fellowship while majoring in analytical chemistry. Arnold Goldburg, who received his M.S. degree in February, received an appointment as a 1951 Daniel and Florence Guggenheim jet propulsion fellow. He will study at Princeton. Dave Grossman

will be at M.I.T. this fall taking City Planning. Some of the others who will be at Technology: Joe Iannicelli, who will work for a doctor's degree in organic chemistry; Earl Kletsky, who will have a teaching assistantship while working for his M.S.; Bill Maini, who will also teach while working for his master's; Bjorn Olson, who has been awarded a graduate scholarship for the 1951-1952 academic year by the Society of Naval Architects and Marine Engineers of New York. George St. Pierre received a fellowship from the Republic Steel Corporation and will use it at M.I.T. where he hopes to work toward his doctor's degree. Tony Stathoplos, who worked at M.I.T. on a Navy research project, is now at the M.I.T. graduate school at Oak Ridge, Tenn., working for his master's degree in chemical engineering. Art Wasserman, our class president, is also at Oak Ridge. He said the work he is doing is mostly in the category of research and development on many varied phases of the processes for the manufacture of fissionable materials. Dan Macero received an assistantship at the University of Vermont where he is doing graduate work. Hu Knipmeyer has switched his area of operation to the University of Illinois Graduate School.

The news about the fellows who put their books away "for a while" and went to work covers many companies as well as localities. Norm Bassett is with the California Oil Company. George Boyden is doing time-study work at the Raytheon Company in Waltham. Bob Bryan, who received his M.S. in City Planning, is now town-planning engineer for Somerville, Mass. Charley Carpenter is working in the Division of Industrial Co-operation at M.I.T. and in the Research Laboratory of Electronics. Bruce Center took a job with the International Harvester Company at Fort Wayne, Ind. Malcolm Chamberlain, who received his Ph.D. in Organic Chemistry this past June, is doing research work in the cellulose products division of the Dow Chemical Company in Midland, Mich. I received a letter from Gerry Burns in which he states that he likes working for Procter and Gamble at Cincinnati. He is training for a supervisory position in the Dreft Manufacturing Division. A short note from Paul Rothery informs us that he is working with the American Smelting and Refining Company in Baltimore. John Conley is doing business management work for a New York City textile concern. Jules Davis is associated with the F. H. McGraw Construction Company at Paducah, Ky. Another new Kentuckian is Lou Dion who has started with Corning Glass at Danville, Ky. Paul Douglass is now enjoying sunny California; he has been working with the Hughes Aircraft Company at Culvert. George Elmer is working for E. I. Dupont Company in Charleston, W. Va. Because of problems of space in The Review this month, news of classmates, including engagements and marriages, will appear in the December issue. Meanwhile, let us have your current addresses and news of your activities.— STANLEY J. MARCEWICZ, Secretary, Morris D-34, Harvard Business School, Soldiers Field, Boston 63, Mass.

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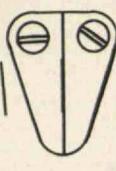
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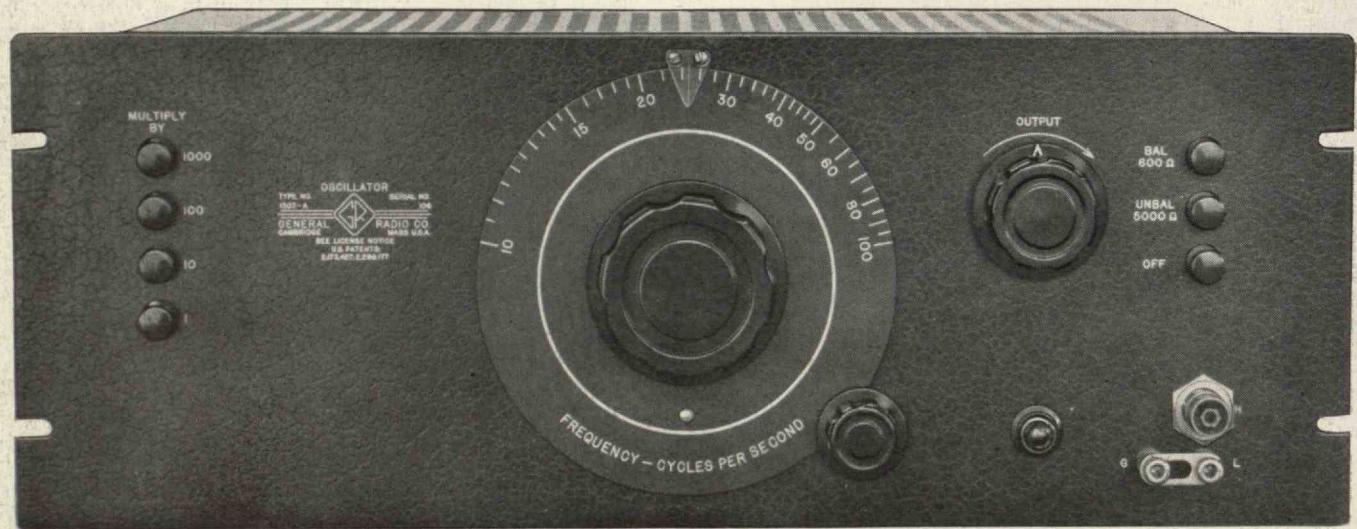


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